

# The Boston Medical and Surgical Journal

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## Original Articles.

### BLOOD CHANGES IN MYELOGENOUS LEUKAEMIA FOLLOWING RADIUM TREATMENT.

By B. R. WHITCHER, M.D., NEW YORK CITY.

[From the Department of Laboratories, New York Post-Graduate School and Hospital.]

**H**istory: Hare in his "Practice of Medicine," states that in 1801 Bichat in France noted a disease and condition of the blood which was probably identical with leukaemia as we know it today, and that during the early nineteenth century clinicians observed this condition in certain cases where the blood in the gross had a purulent character, and they designated it as a "suppurative haematisis," of obscure nature and origin. Our first definite conception, however, of leukaemia as we now know it, dates from 1815, when, on March 19, John Hughes Bennett performed an autopsy on the body of a man from the service of Dr. Christison in the Edinburgh Royal Infirmary who had had hypertrophy of the liver and spleen and whose blood was crowded with corpuscles which resembled those of pus.<sup>1</sup> For twenty months he had complained of listlessness on exertion and of a gradually increasing tumor on the left side of the abdomen. Later, other small tumors had appeared in the neck, axillae and groins. At the autopsy no suppurative foci could be discovered

in the body. Under the microscope Bennett was able to see in the blood a great increase in white corpuscles comparable to those of pus, and he found them to have a granular appearance, and on treating them with acetic acid the nuclei were clearly brought out, the nucleus sometimes consisting of one large granule about 1/200 of a mill in diameter, and at other times of two or three smaller granules "as seen in laudable pus." These colorless corpuscles were found in the blood throughout the vascular system. On stripping off a portion of the pia mater and examining the capillary vessels, all that were not too minute to contain them were found crowded with the same kind of corpuscles. He subsequently called the condition "leucocythaemia" and expressed the view that the increased number of leucocytes was independent of any inflammatory process and that the enlarged spleen "secreted" the purulent matter which caused the pyoid condition of the blood. Seven years later he published descriptions of a number of cases in which the same sort of symptoms and conditions in the blood were found<sup>2</sup>. In addition, some of these patients had epistaxis and bleeding from the gums, and one of them, a woman of thirty-three, who had enlargement of the liver and spleen, and whose blood showed large numbers of granular leucocytes, two or three times larger than the red corpuscles, showed a haemorrhagic tendency by flooding after confinement.

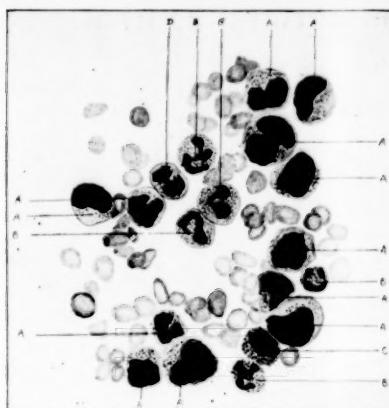


FIG. I.

Group of corpuscles from blood smear of April 30, 1920.  
A—Neutrophilic myelocytes. B—Polymorphonuclear neutrophile.  
C—Eosinophilic myelocyte. D—Macroblast undergoing mitosis.

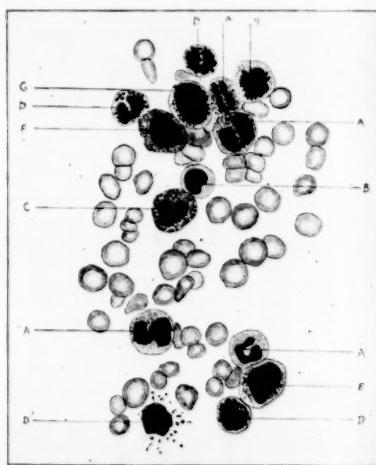


FIG. II.

Another group from blood smear of April 30, 1920. A—Polymorphonuclear neutrophiles. B—Small lymphocyte. C—Polymorphonuclear eosinophiles. D—Polymorphonuclear basophiles. E—Disintegrated basophile. F—Neutrophilic myelocytes. G—Eosinophilic myelocyte. H—Basophilic myelocyte undergoing mitosis.

In January, 1848, in Schmidt's "Jahrbücher"<sup>15</sup> Virchow reported the case of a body which had been dissected in August, 1845, in which the blood presented the same increase of colorless corpuscles, also associated with splenic enlargement. He called this condition "weisses Blut," or leukaemia, and in a successive series

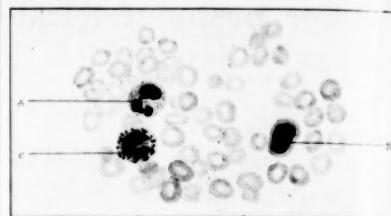


FIG. III.

Group from smear of October 29, 1920. A—Polymorphonuclear neutrophile. B—Large lymphocyte. C—Polymorphonuclear basophile.

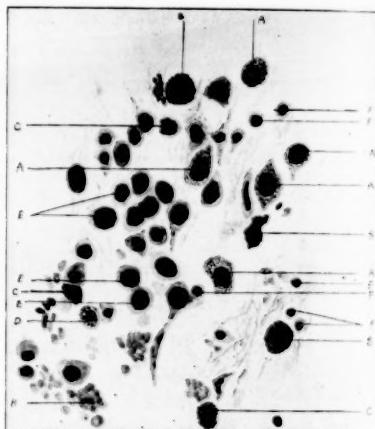


FIG. IV.

Section from marrow of third lumbar vertebra (from autopsy). A—Neutrophilic myelocytes. B—Eosinophilic myelocytes. C—Eosinophilic leucocytes. D—Basophilic leucocyte. E—Megablasts. F—Normoblasts. G—Macroblasts undergoing mitosis. H—Group of normal red cells.

of articles in his "Archiv"<sup>14</sup> he distinguished the condition clearly from pyæmia and recognized the lymphoid character of the cells in one type and their granular character in the other, and he classified the former as the lymphatic and the latter as the lienal or splenic type. Neumann first pointed out the importance of the bone marrow in the production of these large granular cells.

**Pathology:** In this disease, according to Dr. Richard C. Cabot<sup>5</sup>, along with the appearance and increase of the myelocytes in the blood, myeloid transformation of the spleen goes on unchecked in most cases, obedient to that mysterious stimulus which calls the blood-making system into unnatural activity; and since the spleen is not hindered by definite limitations, as the bone marrow is, it may steadily increase in size up to the time of death. However, in some cases, sclerosis of the spleen may occur,

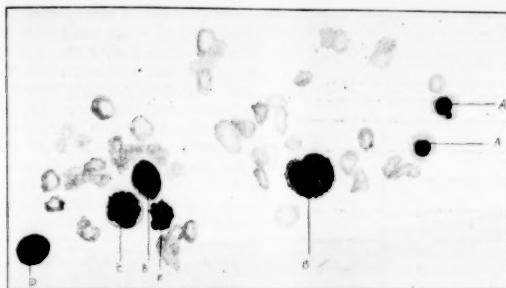


FIG. V.

Smear from marrow of femur (from autopsy). A—Normoblasts. B—Neutrophilic myelocytes. C—Polymorphonuclear eosinophile. D—Large lymphocyte. E—Disintegrating small lymphocyte.

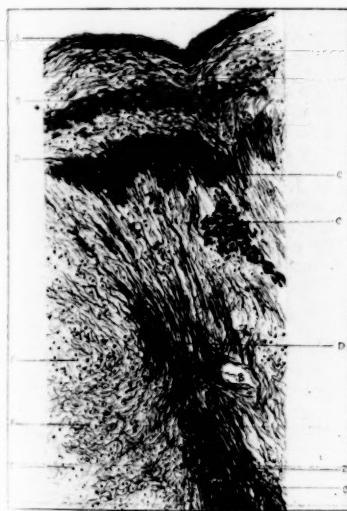


FIG. VI.

Section of spleen seen under low power magnification. A—Capillaries showing increased fibrosis. B—Fibrous septa tissue cut across. C—Masses of haemosiderin granules. D—Trabeculae of fibrous tissue invading splenic substance. E—Lymphoid cells. F—Loose fibrous network.

and the organ may then become lighter in weight, sometimes being only one-third of its former weight. The cellular elements are reduced from one-third to one-fifth of their normal bulk and the number of connective tissue bands about the capillaries and sinuses becomes greatly increased. This sclerosis limits the amount of myeloid change and thus prolongs the patient's life by checking the disease.

The main diagnostic feature, however, is found in the blood, where the leucocytes vary

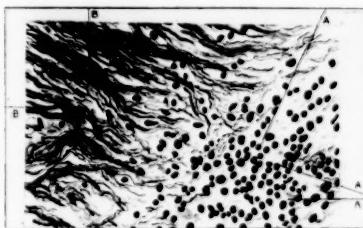
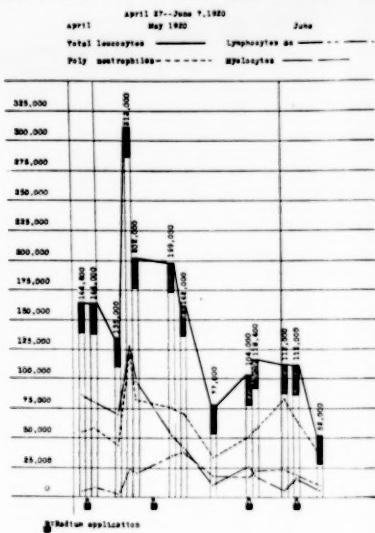


FIG. VII.

Section of spleen seen by higher magnification. A—Lymphocytes. B—Connective tissue fibers.

from 60,000 to as many as 1,500,000 to the cubic millimetre. On examination there is found a very great increase of the large granular leucocytes, and more careful study shows that while at first the polymorphonuclear neutrophiles are still the predominant cells, the most striking increase, as seen a little later, is in the neutrophilic myelocytes, which may constitute half or more of the total. Eosinophilic myelocytes appear in large numbers and eosinophilic leucocytes are absolutely increased, like the neutrophilic leucocytes, but they do not attain to any great proportion among the white cells. The mast cell or basophiles show a marked increase, often showing a larger percentage than that of the eosinophiles, and basophilic myelocytes are abundant. Although the lymphocytes are proportionally greatly diminished, their actual number is greater than that found in normal blood. As a rule the red cells are diminished in numbers especially as the leucocytes increase, but the early oligocytopenia is generally of a mild degree. The red cells are usually pale, resembling those in chlorosis, and microcytes and macrocytes are rare. As the disease progresses, however, nucleated red cells, chiefly of the normoblastic type, are seen, and non-granular myeloblasts are also found.

TABLE I.  
VARIATIONS IN LEUCOCYTE COUNT FROM APRIL 27 TO JUNE 7, 1920.



**Treatment:** Until about ten years ago the disease was considered hopeless, but today a patient afflicted with this disease may be greatly benefited and marked improvement in his general condition brought about, not only by the judicious and persistent use of x-ray treatment, but by careful and persistent use of radium. By careful examinations of the patient's blood, improvement under such treatment may be observed. Benzol has also been administered in some cases with beneficial results, but in general the results have not been as good as those following x-ray or radium treatment.

Dom Etienne Gilbert<sup>6</sup> in the Paris theses of 1914 describes a number of cases of myelogenous leukaemia treated by radium in which excellent results were observed, the red cells increasing to their normal level and the leucocytes decreasing to nearly their normal level, with improvement of the patient's general health. But ordinarily the cure, according to Gilbert, is not stable, the signs of leukaemia often reappearing after some weeks have passed, and with radium treatment after this relapse, the number of leucocytes diminishes less rapidly and the curative action of radium is less effective.

Dr. Francis W. Peabody in 1917<sup>7</sup> reported the general results of the treatment of myelogenous leukaemia by radium in thirty-six cases of the disease at the Huntington Hospital during the previous five years. One of the most striking results of radium therapy was the general clinical improvement. Extremely weak, pale and dyspneic patients who had been bed-ridden so gained in strength that they were able to be up

TABLE II.  
VARIATIONS IN LEUCOCYTE COUNT, JULY 3 TO SEPTEMBER 30, 1920.

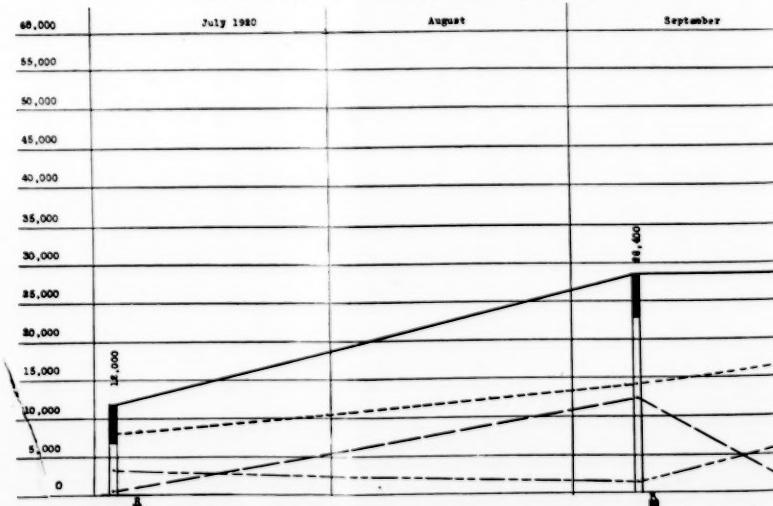


TABLE III.  
VARIATIONS IN LEUCOCYTE COUNT, OCTOBER 1 TO DECEMBER 31, 1920.

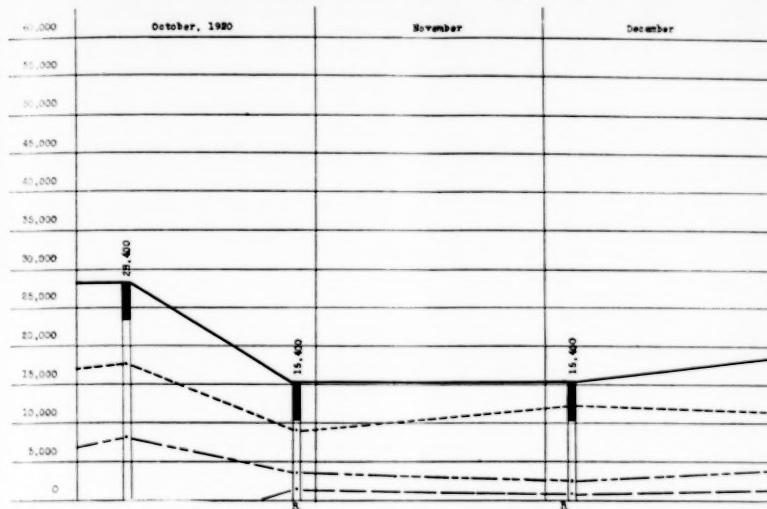


TABLE IV.  
VARIATIONS IN LEUCOCYTE COUNT, JANUARY 1 TO MARCH 3, 1921.

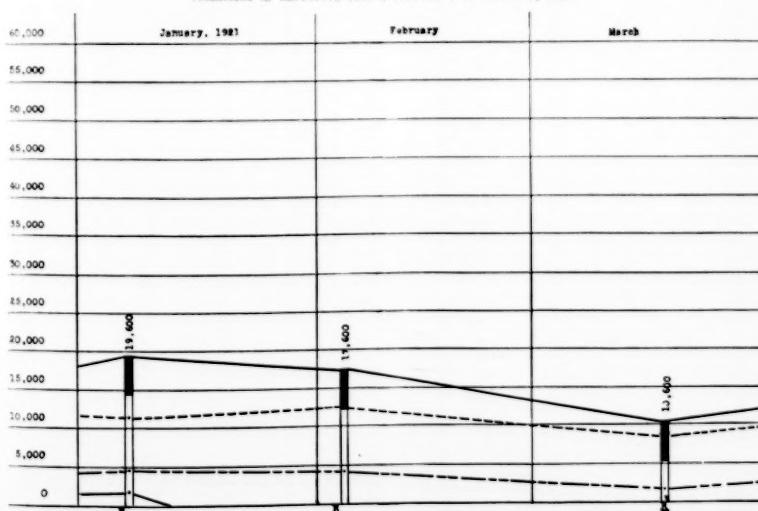


TABLE V.

VARIATIONS IN LEUCOCYTE COUNT, APRIL 1 TO JUNE 30, 1921.

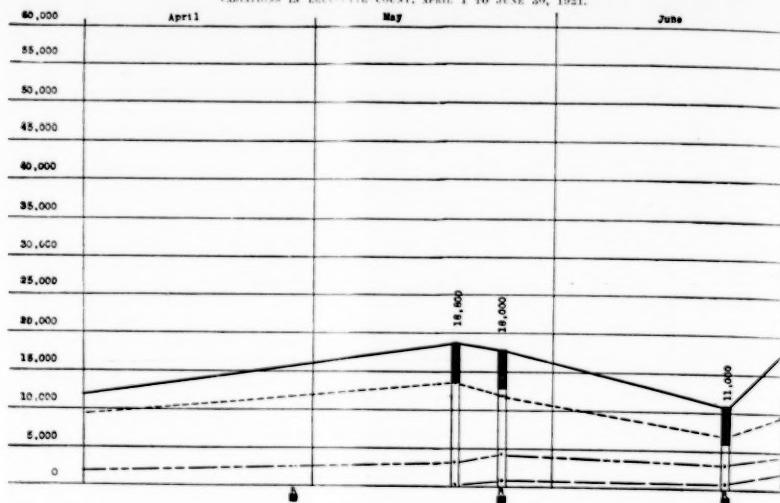


TABLE VI.

VARIATIONS IN LEUCOCYTE COUNT, JULY 1 TO NOVEMBER 1, 1921.

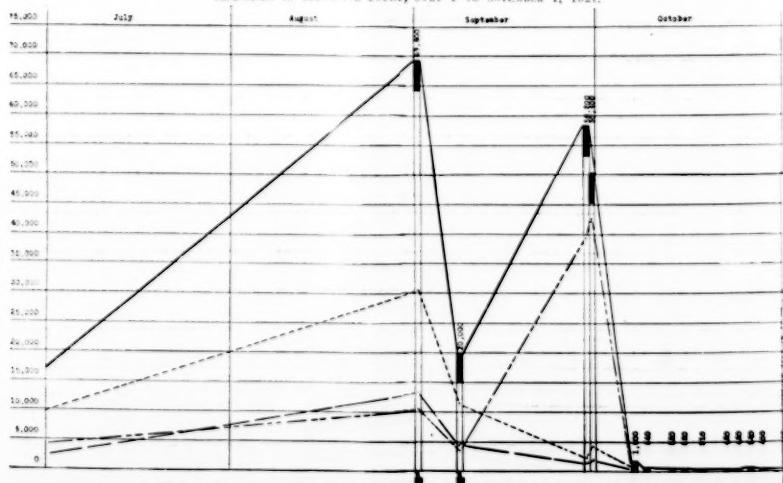
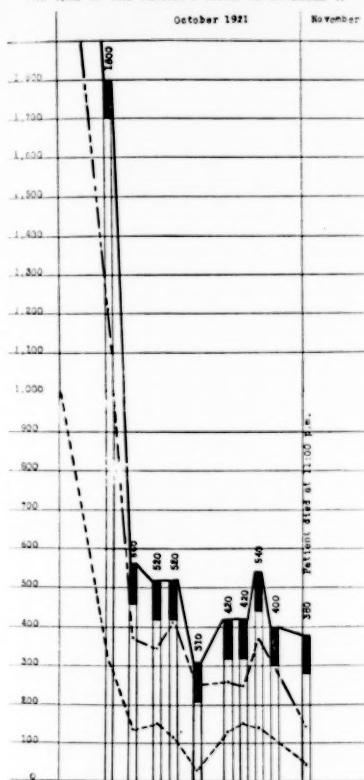


TABLE VII.

SHOWING DEVELOPMENT OF LEUCOPENIA BETWEEN OCTOBER 1 AND THE TIME OF THE PATIENT'S DEATH ON NOVEMBER 1.



and about their daily tasks; the appetite improved, the digestive disturbances became less and there was usually a gain in weight. Another marked improvement was seen in the rapid decrease in size of the spleen.

The most definite effect, however, was seen in the blood picture, the leucocytes being reduced to nearly their normal level. But at the time of his report nineteen of the patients had died and only seventeen were living.

G. Lovell Gulland<sup>10</sup> describes the treatment of myelogenous leukaemia with radium, and while he cannot say that the benefit has been permanent, he regards it as more certain and more rapid than that of x-ray. The first obvious effect is a reduction of the leucocyte count, the neutrophiles, both the polymorphonuclears and myelocytic forms, being most affected in this decrease. Next are the eosinophiles and basophiles, while the lymphocytes and mononucle-

are less affected. The nucleated red cells practically disappear and in successful cases the blood may return to a nearly normal appearance. The spleen grows smaller, although it never goes back to its normal size. On account of its increased fibrosis one would hardly expect it to do so.

Dr. James Metcalf<sup>11</sup> regards radium as of excellent value in leukaemias, especially the myelogenous form, and mentions the case of a man of fifty-nine, afflicted with the latter, who showed marked improvement under radium treatment. The radium was applied over the spleen, sternum and epiphyses of the femora and humeri. He believes the doses must be massive and frequent, as small doses only stimulate the abnormal activity.

*Report of a Case:* During the past two years, several cases of myelogenous leukaemia have been treated with radium at the New York Post-Graduate Medical School and Hospital and it is proposed to report briefly here observation upon one of these in which the treatment has been terminated by the death of the patient.

William E.—, aged fourteen years, first came to the Post-Graduate Hospital April 27, 1920. His family and previous history were negative. In July, 1919, his mother observed that he did not play with his former vigor and energy and he was pale and complained of weakness and loss of appetite. He was examined and given medicine by a physician and continued to decline in health. In October, 1919, he was sent to the Staten Island Hospital on account of enlarged spleen, and remained there for a month, when he was discharged with a very bad prognosis.

Physical examination, upon admission, April 27, 1920, showed a very thin and generally anaemic boy. The lungs and heart were negative except for a soft systolic murmur at the second interspace. Abdomen was protuberant and distended by a large mass on the left side extending obliquely downward from the left hypochondrium, to within 25 cm. of the pubic symphysis. Liver was palpable 8 cm. below the costal margin. No free fluid was detected. Superficial veins were prominent, especially over the abdomen and lower extremities. The Wassermann test, taken on April 27, was negative. A provisional diagnosis of splenomegaly and leukaemia was made.

On April 28, 1920, the first blood count was taken. It showed 3,150,000 red cells per cubic mm., 164,800 leucocytes and 50% of haemoglobin by Tallquist. A differential count of 500 white cells showed 35% of polymorphonuclear neutrophiles, 3.6% of lymphocytes, mononuclears and transitionals, 7.2% of eosinophiles, 7.6% of basophiles, 37% of neutrophilic myelocytes, 7.4% of eosinophilic myelocytes, 3.2% of basophilic myelocytes, and 4% of myeloblasts. A few normoblasts and macroblasts were seen among the red cells. Some

more smears were taken two days later, which showed a similar blood picture with an occasional myelocyte undergoing mitosis.

On April 29, at 4 p. m., 100 milligrams of radium were applied over the enlarged spleen, the site of application being changed to a new skin area every hour until fourteen hours had elapsed. The radium was contained in a glass tube encased in a gold tube 0.1 mm. in thickness, the whole being contained in a brass tube 1.5 mm. in thickness and a screenage of 3 mm. of lead and 3 mm. of rubber and a towel folded to a thickness of 2 cm. was interposed between the brass tube and the patient's skin. The radiation therefore consisted of what is designated as the gamma rays.

On May 4th the leucocytes had decreased to 135,400 per cubic mm., but two days later they were found to have increased to 312,000 per cu. mm. Another count taken on the following day showed 212,000 leucocytes.

The second radium treatment was given on May 10, when 100 mg. were applied, beginning at 3:50 p. m., in twelve successive applications over different areas, each of duration of one hour, with screenage of 1 mm. of lead, 1 mm. of rubber and a folded towel of 2 cm. thickness between the brass tube and the skin.

By May 13th, the leucocyte count fell to 199,000; two days later to 162,000 and by May 20th it had fallen to 77,400 (See Table I). On May 26th, it was found that the leucocytes had increased to 188,400, and on this date, 120 mgm. of radium were applied over the spleen over eleven successive areas, with a screenage of 1 mm. of lead, 3 mm. of rubber, and a folded towel of the same thickness as before, in addition to the brass tube. The leucocyte count began gradually to diminish, going down to 112,000 by June 1, and 111,000 by June 3. On that date 120 mgm. of radium were applied in seven successive applications to different skin areas over the spleen with a screenage of 3 mm. of rubber and 2 cm. of folded towel, for periods of two hours each. On June 7 the leucocytes had diminished to 52,000, while the red cells had increased to 3,926,000 per cu. mm. The differential count showed the different leucocytes to be in more nearly normal proportions, the polymorphonuclear neutrophiles being 37,000 per cu. mm., and the lymphocytes and mononuclears 7,800, while the myelocytes were now only 3,000 per cu. mm. On June 8, the patient was discharged from the hospital.

On July 2 he returned for examination and treatment. The spleen was now greatly reduced in size, the splenic notch being 9 cm. from the tip of the xiphio-sternum, the lower border 14 cm. from the costal cartilage and the right border 14 cm. from the median line. The leucocytes had fallen to 12,000 per cu. mm. On July 6, at 10 a. m., 120 mgm. of radium were applied over four successive areas over the spleen for two hours on each area, with a screenage of 3 mm.

of rubber and a folded towel as before. He returned on September 9, and this time the leucocytes were found to have increased to 28,400. He was now given treatment with 60 mgm. of radium in eight successive applications for sixteen hours altogether, with a screenage of rubber and folded towel.\* On October 7, when he came again, the leucocyte count was the same but the polymorphonuclear neutrophiles had risen from 14,484 to 17,792 per cu. mm., and the lymphocytes and mononuclears had risen from 1,420 to 8,400 per cu. mm., while the myelocytes were no longer found. On October 28, when he came again for treatment, he showed a decided improvement, the leucocyte count being 15,400 and the blood picture appearing much more normal. The most conspicuous feature in the differential count of this date was the excess of basophilic leucocytes. These cells were 9% of the leucocytes or 1,376 per cu. mm. The polymorphonuclear neutrophiles were 9,080, the lymphocytes and mononuclears 3,450 and the myelocytes only 1,016 per cu. mm. The spleen was firm and palpable and the patient had gained ten pounds, his weight now being seventy-nine pounds. The patient was given treatment with 60 mgm. of radium, applied over six successive areas over the spleen for three hours on each area, with a screenage of 1 mm. of rubber and a folded towel, 2 cm. in thickness.

During the winter and spring the patient called at intervals, approximately once every month, for treatment, and on each visit he was treated with radium in fifty-five to sixty milligram amounts, in five to six applications of three hours each over successive areas in the splenic region, with a screenage of 1 mm. of rubber and a folded towel of the same thickness as before. As will be seen in the tables showing the leucocyte variations, the polymorphonuclear neutrophiles approached to more nearly their normal level, and the myelocytes showed a marked decrease, none being found in the differential counts taken in February and March, 1921, and only a few being found in the counts of May and June. The patient's general condition was greatly improved, the anaemic pallor and prominence of the superficial veins having disappeared, and the spleen was reduced nearly to a quarter of its former size.

The patient was away in the country during the summer, but returned for treatment September 1. At this time it was found that the leucocytes had increased to 69,800 per cubic mm., with an increase of myelocytes above the lymphocytes. He was given treatment with 90 mgm. of radium over six successive areas of skin with the same amount of screenage as on last visit. He returned a week later for examination and treatment, and this time the leucocyte count had fallen to 20,000. He was now treated with 100 mgm. of radium in four successive applications of four hours each.

\*The record does not give the thickness of the rubber.

On September 29, the patient came to the hospital complaining of drowsiness, fever and loss of appetite, and a herpetic sore on the lower lip. The leucocytes had risen to 58,200, but the differential count showed a most striking contrast to the previous ones, in that the polymorphonuclear neutrophiles had fallen to 4% or only 2,328, while the lymphocytes had risen to 58% or 35,596 per cu. mm. The patient bled occasionally from the nose and rectum. The red corpuscles were 2,328,000 per cu. mm. On October 7, the total leucocyte count showed a remarkable fall to 1,800 per cu. mm., and the anaemia was more marked. The sore on the lower lip had formed an ulcer the size of a silver dollar and this was diagnosed as gangrenous septic dermatitis following deep infection of the herpetic sore. By October 18, the leucocytes had fallen to 310 per cu. mm., the red cells to 1,148,000 and the haemoglobin to 23.5%. On October 25, the patient was transfused with 500 cc. of blood with only slight improvement. On November 1, the red cells were 1,252,000, the haemoglobin 24%, and the leucocytes 380 per cu. mm., of which there were 18% polymorphonuclear neutrophiles, 70% lymphocytes and 12% basophiles. The patient died that night at 11:00 o'clock.

The autopsy performed the next day at 9 a. m. showed the following conditions:

**General Appearance:** At the left lower angle of the mouth was a serpigenous ulcer, about 40 mm. in diameter. Its floor was sunken and covered with a brown crust. The skin over the left hypochondrium showed several dull white scars, with pigmented borders, level with the skin surface, evidently due to radium burns, the largest being 50 x 17 mm. in extent.

**Abdomen:** 2,000 cc. of opalescent yellow fluid containing fibrin flakes found in the abdominal cavity.

Enlarged spleen weighing 780 grams, adherent to parietal peritoneum beneath cutaneous scars, and containing deep fibrous scar tissue sending fibrous trabeculae into the splenic substance.

Liver weighed 1,930 grams. Its capsule was thickened and lobules enlarged.

Posterior mesenteric vein and tributaries congested. Mesenteric and retroperitoneal lymph nodes brown and moderately enlarged.

Gelatinous oedema of retroperitoneal tissue behind ascending colon with gas bubbles and putrefactive odor, evidently due to agonal invasion of anaerobic bacteria.

**Thorax:** 200 cc. of clear yellow fluid in each pleural cavity. Oedema in posterior portions of both lungs, with firm airless reddish-brown nodule in upper lobe of right lung.

Small petechial haemorrhages in pericardium, both parietal and visceral.

Yellow marrow of long bones replaced by dark red marrow.

**Microscopic Findings:** Spleen: Capsule

showed dense fibrous thickening with thick fibrous scar tissue extending into the splenic substance by irregular fibrous trabeculae, infiltrated along the borders with haemosiderin granules. The Malpighian corpuscles were largely replaced by fibrous connective tissue and the splenic pulp was infiltrated with a fibrous network containing many sinuses and capillaries. Only a few small patches of round cells resembling splenic pulp and occasional accumulations of red cells and many round cells were found. Few polynuclear and eosinophilic cells and very few myelocytes were found. The red cells of the vessels were very scanty, pale, and irregular in form.

**Bone Marrow:** Smears from the marrow of the third lumbar vertebra showed, out of a count of 200 white cells, 12 polynuclear neutrophiles, 112 lymphocytes and mononuclears, 1 eosinophile, 4 basophiles, 26 neutrophilic myelocytes and 33 disintegrated. Occasional nucleated red cells were seen. Sections of the marrow showed ragged masses of red corpuscles, including many normoblasts with occasional microblasts and a few megaloblasts and rarely a giantoblast. Neutrophilic and eosinophilic myelocytes and occasional polynuclears were seen, with large numbers of non-granular mononuclear cells greatly outnumbering the myelocytes and the polynuclears.

Smears from the shaft of the femur showed, out of a count of 200 white cells, 8 polynuclear neutrophiles, 114 lymphocytes, 6 eosinophiles, 3 basophiles, 12 neutrophilic myelocytes, 3 eosinophilic myelocytes, 1 basophilic myelocyte and 33 disintegrated cells. During the count, 19 normoblasts, 7 microblasts, 4 macroblasts and 1 megaloblast were found. In the sections the marrow substance showed a more compact mass of cells than in the third lumbar vertebra. The myelocytes and polynuclears were more abundant and large numbers of non-granular mononuclear cells were seen. Sections from a rib and from the sternum showed a similar appearance to that of the third lumbar vertebra, except that the myelocytes and the polynuclears were less numerous.

**Liver:** Some of the cells contained minute fat particles. In a few places haemosiderin granules were found in the intercellular channels. In one area these channels were distended into spaces resembling alveoli, from 1-40 to 1-10 mm. in size, evidently having formerly been distended with accumulations of myelocytes.

In the mesenteric lymph nodes the lymphoid tissue was mingled with red cells largely disintegrated. In some glands there was an increase of fibrous connective tissue in and around the lymphoid tissue, with some thickening of the vessel walls.

**Lungs:** In a section including the nodular portion, the alveoli were solidly filled with blood, but some contained plasma with few red cells, many of these being disintegrated. The

alveolar capillaries were much engorged. Very few leucocytes were found except endothelial cells, of which there were many.

In conclusion it will be seen that, while the patient appeared to be greatly benefited for the time by the radium treatment, its effects were temporary and when the patient discontinued treatment for two months he suffered a relapse. His subsequent condition showed the need of using the utmost caution in giving radium treatment, especially after a relapse. While an apparent improvement in the blood picture did follow the first treatment with radium after the patient's return, the most striking phenomenon after the second treatment was the rapid fall in polynuclear leucocytes, the blood picture coming to resemble that of lymphatic leukemia, and the rapid leucopenia and anaemia which followed, resulting in the patient's death.

The observations in this case show, on the one hand, that the application of radium in myelogenous leukaemia does produce an apparently beneficial effect on the patient, if the amount of radium applied is regulated with caution, as the leucocyte count is reduced to nearly its normal level, the myelocytes are greatly decreased, and at times made to disappear altogether, the blood is brought to a more nearly normal appearance, and an apparent general improvement takes place in the patient's clinical condition. But the treatment needs to be given at regular intervals. On the other hand, the study of this case indicates that radium is a factor fraught with danger, and that caution is necessary in regulating the amount to be applied, lest an excessive amount of radium or too frequent application may cause undue destruction of the leucocytes and so injure the reproductive powers of the bone marrow that a rapid leucopenia and anaemia result.

While Dr. Metcalf<sup>9</sup> in his treatment of myelogenous leukaemia with radium has applied it over the sternum and epiphyses of the femora, and humeri, as well as over the enlarged spleen, it has been deemed of late, here at the Post-Graduate Hospital, to be a better procedure to apply the radium over the enlarged spleen only, and the lymph nodes, if enlarged, but to let the bone marrow alone, until the myelocytes have entirely disappeared from the blood. There appears to be danger that, in treating the bone marrow at the same time, its power to produce new red cells may be weakened so that the red cells and haemoglobin decrease along with the leucocytes. However, much more experience will be required to ascertain exactly the effect to be expected and the best mode of applying radium therapy in this disease.

The writer gratefully acknowledges his indebtedness to Dr. George T. S. Willis, Associate in Medicine, in charge of radium therapy, who had the care and treatment of the above case, for permission to utilize it in this report.

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- <sup>4</sup> Rudolph Virchow: Archiv für pathologische Anatomie und Physiologie, Vol. viii, p. 174.
- <sup>5</sup> Richard C. Cabot: Osler's "Modern Medicine," Vol. iv, p. 639.
- <sup>6</sup> Dom Etienne Gilbert: La radium thérapie dans les leucémies myéloïques. Paris Thèses, 1914 (Paris, Le François, 1914).
- <sup>7</sup> Francis P. Peabody: Radium Treatment in Chronic Myelogenous Leukemia. BOSTON MED. AND SURG. JOUR., Dec. 20, 1917.
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- <sup>9</sup> James Metcalf: *Ibid.*, p. 273.

## BIO-CHEMICAL STUDIES IN TEN CASES OF DEMENTIA PRAECOX.

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The following bio-chemical studies of dementia praecox were made in the hope that they might aid in our understanding of the disease and that we might discover some positive data which would be of value in working out the etiology of the disease or which would serve as a means of differential diagnosis.

The following studies were made:

1. A twenty-four hour specimen of urine was examined quantitatively for total acidity, total nitrogen, ammonia nitrogen, uric acid and chlorides. The methods used were modifications of Folin's methods. The chlorides were tested by adapting Whitehorn's methods.

2. The renal function test was made in the usual way by injection of one cubic centimeter of phenolsulphonphthalein solution subcutaneously and examining the urine at the end of one and two hours.

3. The blood count was made in the usual manner. The hemoglobin was estimated by a Dare hemiglobinometer. The pipettes used were certified by the Bureau of Standards.

4. A twelve-hour fasting blood was examined quantitatively for non-protein nitrogen, dextrose, uric acid, chlorides and carbon dioxide combining power of the plasma. The methods used were those of Folin and Wu, Whitehorn and Van Slyke.

5. The blood sugar tolerance curve was obtained by giving the patient, who had fasted for twelve hours, 1.75 grams of dextrose per kilo of body weight. The dextrose was dissolved in two and a half times its weight of water. The fasting blood and blood taken one, two and in some cases three hours after ingesting the dextrose were examined. The urine was examined qualitatively for sugar in the latter series.

6. The Goetsch test was made by injecting one-half cubic centimeter of adrenalin 1:1000 intradermally and following the pulse, blood pressure, etc., as described by Goetsch<sup>1</sup>.

7. The basal metabolism was estimated by a Jones metabolism meter. At least one and usually two cheeks were run.

The first nine cases were studied at Bloomingdale Hospital and the tenth at the Boston Psychopathic Hospital. The laboratory studies on the tenth case were made by different technicians and the methods used were different. The non-protein nitrogen and dextrose of the blood were estimated by Benedict's method. The

basal metabolism was done with a portable Benedict apparatus.

After an interval of six months the blood sugar curves and basal metabolisms were repeated on as many cases as possible.

The findings are as follows:

\*ANALYSIS OF URINE (24 hours specimen).

Case	Titrated Acidity C.C. N/10 NaOH	Total Nitrogen	NH <sub>3</sub> Nitrogen	Uric Acid	Chlorides as NaCl	
					as NaCl	
1	136.5	5.25 grams	0.15 gram	0.31 gram		
2	639.6	12.55 grams	0.63 gram	0.54 gram		
3	284.4	5.78 grams	0.46 gram	0.36 gram		6.52
4	222.6	5.96 grams	0.3 gram	0.33 gram		
5	438.6	11.42 grams	0.75 gram	0.50 gram		
6	500.25	12.79 grams	1.16 grams	0.395 gram		11.87
7	495.9	11.75 grams	1.41 grams	0.33 gram		12.345
8	323.4	8.51 grams	0.40 gram	0.49 gram		5.78
9	240.8	6.08 grams	0.34 gram	0.28 gram		4.12

\*The possibility of incomplete specimens, due to patient's lack of cooperation, must be considered.

The urine findings show considerable variation. They add nothing, however, to Folin's studies on the subject, and we agree with Folin's conclusions that "individual peculiarities or abnormalities of metabolism, *i.e.*, pronounced from the standard values . . . are also very

numerous, but so far it has been found impossible to identify any one metabolism peculiarity with any particular form of mental disorder."

The renal function tests show a normal functioning of the kidney.

The blood counts show an essentially normal picture. The hemoglobins are high but within normal limits. The red blood cell counts are likewise high but we feel should not be regarded as of any importance from a pathological standpoint. While the average red blood cell count is usually given as 5,000,000 for males, there is a fairly wide normal variation. For instance, Ehrlich and Lazarus<sup>3</sup> give the normal variations as from 4,000,000 to 7,000,000, and MeJunkin<sup>4</sup> says: "In normal blood there are 4,000,000 to 6,500,000 red blood corpuscles per cubic milli-

RENAL FUNCTION TEST  
(Phenolsulphonphthalein).

Case	1st hour	2nd hour	Total Output	Output	
				as NaCl	as NaCl
1	38%	24%	62%		
2	46%	23%	69%		
3	55%	10%	65%		
4	60%	18%	78%		
5	45%	30%	75%		
6	50%	25%	75%		
7	45%	20%	60%		
8	65%	25%	90%		
9	50%	18%	68%		

BLOOD COUNT

Case	Hgb. (Dare)	Red Blood Cells	White Blood Cells	Polys.	Small Lymph.	Large Lymph.	Trans.	Eosin	Baso
1	101%	5,168,000	7,800	53%	37%	5%	2%	2%	1%
2	96%	7,072,000	7,000	57%	39%	2%	2%	—	—
3	89%	5,228,000	5,400	64%	34%	2%	5%	5%	—
4	86%	5,920,000	4,800	55%	40%	2%	3%	—	—
5	100%	6,992,000	7,400	58%	30%	3%	6%	2%	1%
6	86%	5,432,000	7,600	69%	25%	1%	3%	2%	—
7	96%	5,552,000	10,200	63%	29%	4%	1%	3%	—
8	99%	5,552,000	10,200	74%	21%	3%	2%	—	—
9	103%	4,980,000	6,400	48%	38%	2%	6%	5%	1%
10	85%			59%	30%	10%	—	1%	—

ANALYSIS OF BLOOD.\*

Case	N.P.N.*	Dextrose*	Uric Acid*	Chlorides* as NaCl	C.C. of CO <sub>2</sub> *	
					as NaCl	
1	39.9	86.9	3.3	520		63.1
2	31.68	157	2.6	533		59.8
3	28.02	119	3.13	487		
4	28.08	137	3.05	528		60.2
5	27.0	120	3.33	462		
6	30.3	97	3.2			
7	28.56	114	2.88	495		64.0
8	25.53	128	2.27	478		60.7
9	26.1	93	1.2	461		
10	30.5	113.7	2.25			

\* Expressed as grams per 100 c.c. of whole blood.

meter. The white blood cell counts are normal. The differential counts show a normal relation of the different types of cells, except that two cases show an eosinophilia of 5 per cent.

The blood chemistry findings are essentially normal, with a tendency towards a slight rise in the blood sugar. The literature on the subject has been fully reviewed by one of us<sup>5</sup>, and we feel that there is no reason to consider that the fasting blood shows any characteristic abnormality.

#### BLOOD SUGAR CURVES.

Before considering our findings it might be well to briefly summarize the literature on the subject.

Olmstead and Gay<sup>6</sup> have recently made rather extensive studies on the subject. They suggest the use of the term "blood sugar curve after glucose meal" or "blood glucose curve." They have made an interesting classification of types or curves, which is given below. The method used was essentially the same as that described at the beginning of this article.

The normal curve has a fasting level of 80 to 120 mgm. At the end of the first hour there is a hyperglycemia of from 140 to 190 mgm. and at the end of the second hour the blood sugar has returned to the normal limits. The third hour is still within normal limits but is very frequently lower than the second hour.

#### BLOOD SUGAR CURVES.

Case	Milligrams Dextrose Per 100 C.C. Blood	Fasting	1st hour	2nd hour	3rd hour
*1	87	154	91	81	
2	157	230	179	..	
*2	111	200	115	60	
3	119	232	105	..	
4	137	175	183	..	
5	120	277	146	..	
*5	100	143	100	75	
7	114	292	236	..	
*7	105	266	191	143	
8	128	180	132	..	
*9	83	200	187	171	

\* These tests were made after an interval of six months. In cases 1 and 9, cooperation could not be secured for the first series; in cases 6 and 10, cooperation could not be secured for either series.

Abnormal curves are divided into two main classes. The term "sustained" curve applies to all curves which show an abnormally sustained hyperglycemia. These "sustained" curves are divided into two groups. In group two are included cases in which there is still hyperglycemia at the end of the second hour, but which show a normal sugar content at the end of the third hour. Group three includes cases in which the hyperglycemia is sustained even at the end of the third hour.

The term "subnormal" curve applies to those cases which show a normal fasting sugar and no hyperglycemia following the administration of the glucose meal. According to the authors, this may be caused by one or both of two possi-

bilities: "Either a delayed absorption rate or an increased glycemic function." They feel that the "subnormal" curve of hypothyroidism is not due to delayed absorption, whereas delayed absorption may occur in the subnormal curve of hypopituitarism.

Among a large series twelve cases of dementia praecox were examined. Five showed normal curves. Three showed No. 2 hyperglycemic curve. Three showed No. 3 hyperglycemic curve and one showed a subnormal curve.

They conclude: "The pathologic conditions in which the form of blood glucose curve is usually (within certain limits) constant, are: (1) hyperthyroidism and hypothyroidism; (2) hypopituitarism; (3) diabetes mellitus."

Kooy<sup>7</sup> examined a large number of cases of mental disease, including ten cases of dementia praecox. These latter were all cases of several years' duration (except one which had been sick for six months only) and were considered typical cases. The procedure used was as follows: The fasting blood was taken in the morning; then a breakfast of 100 gms. of bread and 200 c.c. of milk was given. Blood was drawn at forty-five minute intervals for three times. Patients avoided exercise, excitement, etc. The average blood sugar findings of the ten cases were: Fasting 93 mgm.; three-quarters of an hour, 123 mgm.; one and one-half hours, 110 mgm.; two and one-quarter hours, 110 mgm. Thus Kooy found a consistent No. 2 hyperglycemic curve. (Blood was not taken after two and one-quarter hours.)

Raphael and Parsons<sup>8</sup> examined the blood sugar curves of several types of mental disease, including eleven cases of dementia praecox, using the standard technique.

They conclude: "The curves of the dementia praecox group are strikingly different from those of the others. (Manic depressive depression, hypomanic and norms.) They show a great variation in their acme levels, yet the shape of all curves within the group is practically the same. Curves 1 to 7 inclusive are all practically parallel to one another. All of these cases were in the acute phase. The general shape of the curve differs from the normal in that the initial fasting level is lower, the acme is relatively high and the return to the primary level takes more than three hours, there being a very definitely delayed tolerance.

"Whether or not all of the variations of these curves can be explained by the emotional reactions of the patients, this in turn being in interrelation with a hypersecretion of epinephrin, thus mobilizing the glycogen of the liver and hence increasing the amount of glucose in the circulatory blood is an unsettled question.

"It may be stated on the basis of the data secured in these experiments, employing the Benedict modifications of the Lewis Benedict method for blood sugar, that tolerance curves differ from those obtained in normal individuals

... that in each clinical group, the curves had features in common that suggest a curve type; that among cases of dementia praecox tolerance curves vary according to the phase of the clinical course."

Lewis and Davies<sup>6</sup> studied twenty-two cases of "schizophrenia." Following the classification of Olmstead and Gay, they found subnormal curves in sixteen of their cases, a sustained curve in five cases and an "atypical" curve in one case.

We find, therefore, that different observers report quite different curves in the blood as a result of glucose feeding and that all types of curves are reported.

In our own cases we found normal curves in three cases, sustained curves in three cases and two cases which gave sustained curves at the time of the first examination and normal curves at the time of the second examination six months later.

The height of the curve is abnormal in seven of eleven tests, ranging from 200 mgm. to 292 mgm.

The interpretation of these findings can best be taken up in connection with the basal metabolism.

Goetsch<sup>7</sup> regards the injection of epinephrin as a specific test for hyperthyroidism. There is considerable dispute as regards the specificity

#### GOETSCH TEST.

Case	Rise in Blood Pressure	Rise in Pulse Rate	Other Physical Signs	Mental Symptoms	Estimation of Reaction
1	8 mgm. Hg.	0	None	None	Negative
2	20 "	14	None	None	Negative
3	25 "	14	None	None	Negative
4	24 "	14	None	None	Negative
5	10 "	8	None	None	Negative
6	18 "	8	None	None	Negative
7	36 "	32	None	None	Negative
8	10 "	8	None	None	Negative
9	14 "	20	None	None	Negative

#### BASAL METABOLISM\*

Case	First Estimation	Second Estimation	Third Estimation
1	-20		
2	-2	+5	
3	-12	-13.5	
4	-20		
5	-27		
6	+5	+1	
7	-12	-12.5	
8	-15	-9	
9	-8		
10	-24	-31	-37

\* Where second or third estimations are recorded an interval of over one week occurred between such estimations.

#### SECOND SERIES \*

Case	1st Estimation	2nd Estimation
1	-2	
2	+1	
4	-10	
5	-10	
6	+5	
7	-8	
8	-10	
9	+10	+10

\* Taken after an interval of six months.

Case	FIRST SERIES	SECOND SERIES
1	Average	Average
2	-20	-2
3	+1.5	+1
5	-13	
6	-20	-10
7	-27	-10
8	+3	+5
9	-12	-8
10	-8	+10
	-31	

of this test, but there is no question that a large percentage of cases of hyperthyroidism give a positive reaction to this test.

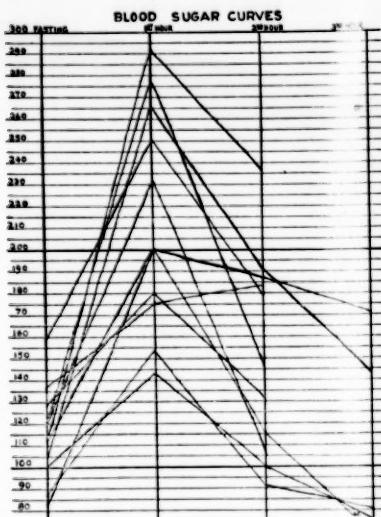
The consistent negative reaction of all our cases to this test can be considered as very strong evidence that hyperthyroidism was not present.

#### BASAL METABOLISM.

The basal metabolisms are of interest. In the first series of readings only three are normal, taking  $\pm 10$  per cent. as the normal limits. The other seven are all decreased, ranging from -12 per cent. to -31 per cent. In the second series of readings, which were done after an interval of six months, the readings in eight cases are all within normal limits. Two cases left the hospital and therefore could not be repeated. While there is some increase in many of the cases, the tendency to remain above or below the zero reading is unchanged, except in one case, No. 9. In this case there was a history of recent enlargement of the hands and head with an acromegalic picture. Cases 1 and 7 showed some improvement in the six months' interval. It is noteworthy that not a single test in the entire series gave an abnormally high reading, and, except in Case 9, the highest reading was +5 per cent. On the other hand, abnormally low readings were common, the lowest being -37 per cent.

#### DISCUSSION.

It is well known that certain endocrine conditions influence the blood sugar tolerance curve and the basal metabolism. There have likewise



been numerous attempts to correlate dementia praecox with various endocrine disorders, particularly hypothyroidism<sup>10</sup> and hypogonadism<sup>11</sup>. The literature is much too full to be reviewed here and is as yet in a very chaotic state.

It cannot be said that our studies have clarified the matter in any way. We find nothing to confirm a simple dysfunction of a single endocrine gland as a constant condition in dementia praecox.

While the tendency towards low basal metabolism is suggestive of hypofunction of some gland, the tendency towards abnormally sustained sugar curves is equally suggestive of hyperfunction.

It is perhaps worthy of note that in no case was there increased basal metabolism (which is usually a sign of hyperfunction of some gland), nor was there a subnormal sugar curve (which is usually a sign of hypofunction of some gland).

The two other endocrine conditions which might explain our findings are either a pluriglandular condition or an altered secretion of a single gland. It is manifestly impossible to more than mention these possibilities.

#### CONCLUSIONS.

As a result of a series of biochemical studies on ten cases of dementia praecox no constant findings were obtained which would serve to explain dementia praecox on the basis of a simple dysfunction of a single gland.

There was found a tendency towards a low basal metabolism and an abnormally sustained

blood sugar curve, but such findings were not constant.

In no case was there an increased basal metabolism nor was there a subnormal (flat) blood sugar curve.

**CASE 1.** Dementia praecox, paranoid type. Male, 49 years. Physical examination negative.

**CASE 2.** Dementia praecox, paranoid type. Male, 17½ years. Physical examination showed right pupil slightly larger than left. Blindness of right eye. Tremors of fingers and tongue. Deep reflexes exaggerated but equal. Pubic hair of feminine distribution. Body contour otherwise normal.

**CASE 3.** Dementia praecox, paranoid type. Male, 30 years. Physical examination showed right pupil slightly larger than the left. Tremors of fingers and tongue. Deep reflexes exaggerated but equal. Blood pressure 95/66.

**CASE 4.** Dementia praecox, simple type. Male, 28 years. Physical examination showed rather poor nutrition and fine tremor of fingers.

**CASE 5.** Dementia praecox, paranoid type. Male, 40 years. Physical examination showed thyroid palpable, tremors of tongue and fingers and deep reflexes exaggerated but equal.

**CASE 6.** Dementia praecox, paranoid type. Male, 27 years. Physical examination showed no neurological findings. Blood Wassermann was weakly positive. Spinal fluid was negative to all tests.

**CASE 7.** Dementia praecox, paranoid type. Male, 33 years. Physical examination was negative except for poor nutrition.

**CASE 8.** Dementia praecox, simple type. Male, 26 years. Physical examination showed fine tremor of tongue and fingers. Deep reflexes were hyperactive with tendency to patellar ankle clonus on the right.

**CASE 9.** Dementia praecox, paranoid type. Male, 24 years. Physical examination showed tendency towards acromegalic type of bone conformation. History of recent enlargement of hands and head. Otherwise negative.

**CASE 10.** Dementia praecox, simple type. Male, 15 years. Physical examination showed poor development. Fingers long and graceful. No axillary hair. Pubic hair of the feminine type.

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## Medical Progress.

### REPORT ON DERMATOLOGY.

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#### SUSCEPTIBILITY TO POISON IVY.

Brown<sup>1</sup>, of the Department of Pharmacology of the University of Minnesota, has recorded the results of his experiments as to the variability in susceptibility to poisoning. He truly says as to treatment that almost everything conceivable has been employed, and that this is evidence that we are still ignorant as to what are the best measures of relief. He began with the belief that some persons are insusceptible to the poison, but has changed his opinion in the light of his own investigations.

Observations were made on a group of students who were willing to submit to experimentation, by placing a piece of the fresh leaf on the left arm, and holding it there by means of adhesive plaster. This was removed at the end of 12 hours, and the susceptibility estimated by the time required to produce a reaction and by the different degrees of severity. It was found that in a group of nine persons, three were, as at the time supposed, insusceptible. Three of the remaining six had previously considered themselves immune, but the reaction was longer delayed than in the case of the other three. On an average it required approximately 2-1-3 days for the symptoms to appear after the leaf had been applied. To another group of 11 students a tincture prepared from the leaves was applied to the arm, and the area covered with adhesive plaster. All except two showed a reaction, and among those showing positive results were two who had not been poisoned by the leaf in the preceding experiment. The tincture appeared to give more certain results than the leaf; but the degree of reaction, as in the case of the leaf, bore no relation to the time required to produce the eruption.

Brown isolated a fixed oil or oily substance from the leaves, which is probably the same as the toxicodendrol of Pfaff. This failed to produce an eruption in only a very few instances. With regard to the spreading of the eruption, some have held that it is carried from the initial point to the other parts of the body by the hands or clothing. This has been proved to be the case in some instances. Brown's experiments by covering the part to which an extract of the leaves had been applied with a celluloid vaccination shield, show that the eruption may be spread to the body by means other than direct or indirect contact; presumably, therefore, through the blood or lymph. His experiments did not show that the serous exudate from the ruptured vesicles could spread the eruption. In the case of a person who chewed the leaves, the mucous membranes of the mouth were not af-

fected, and, moreover, of more than 100 observed cases of the eruption there was no instance of involvement of the mucous membranes. Since it has been proved that the active principle is not volatile, the cases of people who claim to have been poisoned by merely going into a vicinity where the plant happened to grow, are best explained by the supposition that insect carriers are responsible. The following conclusions are drawn:

1. There is a variability in susceptibility in different persons.
2. There is evidence pointing to the variability in the susceptibility of a given person.
3. The time required for the onset of symptoms in 19 clinical cases in which reliable data were obtained was from 5 hours to 8 days.
4. The eruption may spread over the body, without conveyance of the poison from the initial lesion through the agency of the hands or clothing.
5. The serous exudate from the vesicles plays no part in spreading the eruption to other parts of the body.
6. There is no evidence of total insusceptibility.
7. It is probable that the poison may be conveyed through the air by insects, rather than by dust or pollen.

#### BREAKING OF THE HAIR.

R. Sabouraud<sup>2</sup> states that while it is easy to recognize the cause in the larger number of cases of breaking of the hair, or trichoclasia, in a certain number it remains obscure. The most beautiful hair is admittedly encountered in young girls of from 12 to 16 years, and it is only after this age that the hairs begin to break. Sabouraud distinguishes three types, first simple trichoclasia, a transverse fracture of the hair, without the preceding occurrence of any node at the point of breaking. In trichorrhixis, on the contrary, there appear from one to three grayish swellings along the free ends of the hair, which are the points of fracture, and here the hair is split up into fibrils. When the breakage has taken place the ends of the broken hairs take the form of a broom, and this condition is called trichoptilosis. Oftentimes these three types or stages may be seen in the same head of hair, and occasionally in great numbers. It has been believed that this affection is preëminently an oriental one, and especially prevalent in Constantinople, the cause being a parasite. It has been further asserted that the fact that the false hairs of the same head may be equally affected is a proof of the parasitic etiology. Hence an active anti-parasitic treatment, without favorable result, the rule being that the affection once established, progresses and never disappears. This is an entirely wrong view, according to

Sabouraud, who maintains that the treatment is exactly the reverse of that indicated, since the strongly alkaline soaps used remove the oil and add to the fragility of the hair. He considers the parasitic theory a wrong one, and that the trichoclasis is of traumatic and artificial origin. Besides the shampoos, curling, "permanent waving," dyeing and bleaching contribute to the bad effects. Sabouraud speaks vigorously against the recent practice of permanent wave, having seen dozens of cases in which the hair was brittle, broken and covered with nodes after the procedure, and a number of cases in which the hair was permanently ruined. The proper treatment of these conditions is cutting the hairs beneath the point where they are affected, avoiding the causes above enumerated that have been responsible, and especially the shampooing with alkaline soaps.

In résumé Sabouraud affirms that trichorrhixis nodosa, and the simple trichoclasis represent in no sense a disease of the hair. It is owing to the procedures of the coiffeur that the hair is made susceptible to various sorts of traumatism, especially those produced by irritating lotions and soap washings, by dyeing and bleaching, curling and waving. Besides these cases, which are of daily occurrence, there are certain cases of spontaneous trichorrhixis of the mustache, of trichoclasis *en plaques* of the hair without any perceptible lesion of the skin, and also some instances of trichoclasis *en plaques* on thickened, dry, and pruritic skin, which are quite rarely met with.

#### PEMPHIGUS FOLIACEUS FROM ARSENOBENZOL.

Nicholas and Massia<sup>3</sup> have observed three instances of this affection, which is an unusual occurrence among the large number of forms of cutaneous disturbance due to the administration of arsenobenzol. Moist lesions are very common, and the generalized lesions are not rare, but for the most part one sees exfoliative erythroderma with redness and desquamation.

Pemphigus foliaceus seems from these observations to appear after the last, and to be preceded by a simple erythema which gradually extends, becomes infiltrated and squamous and is followed by the appearance of vesicles and bullae which open as soon as they are formed. Hence erythema, slightly squamous, more or less pruriginous and situated especially in the folds and on the neck, appearing during the course of treatment with arsenobenzol, should give immediate cause for alarm. The evolution is rapid and in a few days the symptomatic picture is complete. The scales are always very abundant, and the exudation more or less abundant. There are no mucous membrane lesions, nor is the scalp affected. There is no marked rise in temperature, and no notable lesions of the internal organs, except a nephritis observed in one case. There is much prostration, sometimes delirium, and always anorexia.

This symptomatology is much like that seen in the ordinary case of pemphigus foliaceus, but there is much difference in the evolution of the arsenobenzol cases. In the ordinary case of pemphigus foliaceus the duration is of months and years and the affection is very often fatal; whereas in the arsenobenzol cases the evolution is much quicker, and healing of the cutaneous lesions is the rule. In the writers' second case, it is true, there was a fatal ending, but this did not occur until the skin lesions were almost wholly healed, and the case was complicated by a gangrene of the right foot with arteritis, which they are not able to assert to have been of arsenical origin, although they cannot exclude this cause. In any case pemphigus foliaceus of arsenobenzol origin is a dermatosis of less gravity than the ordinary form and its evolution is shorter, and this is true also of the other cutaneous types from this cause. As to the pathogenesis of these cases, the writers think that anaphylaxis may be at once eliminated, on account of the tardy appearance of the eruption, its irregularity and the number of arsenical injections, nor do they consider that it can be due to a latent infection. They incline to the view that there is a true arsenical intoxication. Perhaps there is a cumulative intoxication caused by a perversion of functioning by the organs which should eliminate the arsenic, particularly the liver. The treatment of the cutaneous lesions is in the main prophylactic. In the course of treatment by arsenobenzol, the attention should be especially arrested by the appearance of more or less marked erythema, or of eczematous lesions of the folds, and the treatment then promptly suspended before the process has progressed to the production of more serious lesions.

#### PSORIASIS AND ITS TREATMENT.

Several papers on this subject were read at the meeting of the American Dermatological Association held on June 2-4, 1921. Jamieson<sup>4</sup> of Detroit related the results of his experimental work on blood nitrogen in psoriasis. The investigations of Schamberg and his associates have shown that persons suffering from psoriasis are capable of retaining nitrogen to a remarkable degree, much greater than is observed in any other condition. They are therefore inclined to believe that a high or even relatively high nitrogen diet has a baneful influence on psoriasis, and that there is little doubt that a low nitrogen diet has a favorable influence on the skin lesions. Their ingenious explanation is that the epithelial cells of the skin keep on growing as long as there is available protein in the system, and when this is exhausted their growth is checked. Hence if the patient is kept on a low protein diet this point of exhaustion is hastened, while a high protein diet stimulates the epithelial cell growth and delays improvement. Jamieson firmly believes in the metabolic origin of psoriasis. In analyzing the many different reports of psori-

asis from all parts of the world, it is seen that there are many varied conditions preceding an attack of psoriasis, but that all are conditions that may produce a profound disturbance in the body metabolism. These disturbances may also cause remissions of the psoriasis, and therefore it seems that "psoriasis is a definite clinical dermatologic manifestation, due to faulty metabolism induced by many underlying conditions and manifesting itself in an incomplete keratinization of the dermal cells."

In Jamieson's investigations 45 cases of psoriasis were examined, some of them having only a few nitrogen determinations, others returning regularly at monthly intervals. Some of these cases were extensive and severe, others showed only a small number of lesions, but were of a rebellious type. The conclusions drawn from these investigations are that it is impossible to state that the increase or decrease of the lesions in the cases examined corresponds with an increase or decrease of either total non-coagulable nitrogen or uric acid. The uric acid curve was at its low point during the warm months of summer and early autumn, and the total non-coagulable nitrogen curve is also similar in this respect.

With regard to the treatment of psoriasis, Sutton<sup>5</sup> of Kansas City relates his results with a method employed during the last two years, which he began to use as a war measure in order to get rid of the eruption as quickly as possible in candidates for the aviation corps. The method is to be used only in the quiescent stage and not during the acute or eruptive periods. Careful general physical examination should precede the treatment and nephritis or a serious heart lesion would debar it. In 42 cases he has had good results. The method consists of the injection of a foreign protein (in the form of an autogenous colon vaccine) and the liberal use of a chrysarobin ointment, much stronger than that commonly applied (20 per cent.). Sutton states that he has been gradually discarding, for several years, the more complicated formulas in the local treatment of psoriasis and depending more and more on chrysarobin. He has found by experimentation that a 20 per cent. mixture of chrysophanic acid and petroleum can be safely applied to one-third or even more of the entire cutaneous surface without serious local or constitutional disturbance. The ointment he applies by means of a stiff toothbrush twice a day, the patient being kept in bed and the eyes bandaged at night, and he has found seven days a sufficient time on the average. Afterwards he gives arsenic.

At the same meeting O. H. and H. R. Foerster<sup>6</sup> of Milwaukee recorded their observations on a new method of Roentgen-ray therapy in psoriasis. The method is that described by Walter Brock of Kiel University and originated in an observation by Brock that a child with psoriasis, especially of the head and chest, de-

veloped an extensive and severe outbreak while under treatment with Roentgen-rays for local effect. Experimentation instigated by this led Brock to the conclusion that irradiation of the thymus gland, with careful attention to its surface topography, leads to the disappearance of the lesions of psoriasis in from one-half to two and one-half months under certain conditions. An overdose was found to be followed by an active development of the affection. Brock explained the action of this method of treatment by assuming that psoriasis is associated with hypofunction of the thymus, which can be temporarily overcome by stimulation with Roentgen-rays. The Foersters' observations concerned 23 patients and extended over a period of five months. Eleven patients were given a second dose after two months, and two received a third dose. The original paper should be referred to for the details of the treatment. In most of the cases that responded to treatment there was a slight elevation and congestion of the lesions within a few days, and after 8 to 12 days the lesions involuted rapidly; in several cases large thickened plaques of long standing disappeared completely in four weeks. In 13 of the 23 cases the condition was at least markedly improved. In eight most of the eruption disappeared entirely; in five there was complete clearing up, three of the five showing a recurrence after varying interval. The writers, as a result of their investigations, regard this method as one that produces favorable, although apparently temporary, results in a sufficient number of cases to warrant its position as a practicable procedure in treating psoriasis.

In the discussion that followed the reading of these papers, Dr. G. H. Fox of New York emphasized the superiority of the old chrysophanic acid that was in the market 40 years ago, to the chrysarobin of today. It was the prevailing opinion that the etiology of psoriasis is still as obscure as ever. Also that a low protein diet often exerts a marked influence on an eruption of extensive psoriasis. Schamberg stated that he had never claimed that a metabolic error was the cause of psoriasis, but that diet has a most important bearing on its course. He thinks that no remedy, either external or internal, will exert a favorable influence in the stage of eruptive activity. We must bend our energies to converting an active into a quiescent psoriasis, and he considers that two methods are capable of bringing this about: a low protein diet and autoserum injections. When the eruption has become quiescent it may disappear under various internal and external agencies.

#### OIL POLLICULITIS.

Page and Bushnell's<sup>7</sup> paper is concerned with the skin affection due to oils, and particularly with those due to the use of machine oils, their interest in this subject being aroused by

an investigation undertaken to find the cause of an epidemic of furunculosis among those employed in a machine shop. As in the case of machine oil, the disturbance seems to be largely due to a mechanical plugging of the follicles, followed by inflammation and infection, and they therefore suggest the name oil folliculitis. After a comprehensive historical review of skin affections produced by oil, the type of lesions, and influences predisposing to infections of the skin, the writers declare that very little attention has been given to the bacteriology of oils. The bacillus subtilis and the usual pus-forming organisms have been reported found. The writers in their experimental work isolated the following organisms: Type I *Bacillus aerogenes*; Type II *Bacillus coli communis*, both of fecal type; also Type III, which was a Gram-negative, non-spore forming, active motile rod, very similar to the liquefying *Proteus vulgaris* strains. The following is a summary of the writers' conclusions:

1. Oils of all types are likely to produce skin affections if they come in contact with the skin for some length of time.

2. The most serious skin diseases are probably due to the oil acting as a carrier of infections material from one individual to another.

3. Individuals of the most cleanly habits are, generally speaking, least liable to skin affections due to oils.

4. Special care should be exercised by workmen on cutting machines to avoid contamination of the oil, especially by saliva.

5. Individuals having skin diseases should be transferred to some other type of work.

6. While oils may be placed on the market in a sterile condition and free from dust, etc., they will not long remain so after being put in use.

7. By heating the oil to 70° C. for 20 or 30 minutes it is possible to destroy all the dangerous pathogenic bacteria likely to be present.

8. It would seem very desirable to use oil which has been rendered free from dust, and especially from particles of metal.

9. Workmen should not exchange waste and rags used in cleaning their hands, and should not bathe their hands in the oil.

10. Clothing saturated with oil should not be worn, especially if there is an epidemic of skin diseases among the workers.

#### INJURIOUS COMBINED EFFECT OF ROENTGEN-RAYS OR RADIUM AND TOPICAL REMEDIES.

MaeKee and Andrews<sup>8</sup> point out that physicians, even those who do not employ x-rays and radium, should understand the dangers that attend the association of these forms of treatment with irritating topical applications.

Irradiation, whether or not followed by visible reaction, increases the sensitiveness of the skin to irritating agents. Small doses of Roent-

gen-rays or radium combined with strong local irritants may result in severe injury, as may also large, although safe, doses of Roentgen-rays or radium combined with mild topical irritants. But intensive irradiation associated with strong topical irritants is the combination most likely to produce injurious results. Ordinarily the skin, when there has been no visible reaction or permanent injury, will react to topical remedies in one month. If there has been a reaction the skin is likely to remain sensitive for months or years, and in cases where there has been permanent injury, telangiectases, atrophy and scarring may result. Fractional irradiation is cumulative in effect, and the degree of hypersensitiveness of the skin will depend on the size of the individual doses and the interval between the applications.

The topical application of stimulants, irritants and caustics makes the skin hypersensitive to irradiation, the degree depending on the strength of and method of applying the topical remedy, and also on the time interval between the application of the topical remedy and the irradiation. Any drug that is capable of causing an inflammatory reaction in the skin may make it more susceptible to irradiation. Among these may be mentioned chrysarobin, scarlet R medicinal, iodine, mercury, resorcin, tar, sulphur, salicylic acid, etc. The writers assert that they cause the least trouble when used as powders, more when in solution, and the most as ointments. Caustics, as acid nitrate of mercury, zinc chloride, nitrate of silver, etc., may increase the effects of irradiation, as well as ultraviolet light and refrigeration, especially the latter. The combined effect of irradiation and topical stimulants, irritants or caustics produces a reaction that is, as a rule, indistinguishable clinically and pathologically from radiodermatitis.

After citing eight cases in illustration, the writers come to the following conclusions: Roentgen-rays and radium may make the skin hypersensitive to stimulating, irritating and caustic agents locally applied. As a rule the skin will react normally to topical remedies in a month; but if there has been a reaction the hypersensitivity may endure for several months, and if the skin has been permanently injured, the hypersensitivity may be detected for a year or two, or even indefinitely. Stimulating, irritating and caustic remedies, when locally applied, produce hypersensitivity to Roentgen-rays and radium for about a month. If the skin reacted to the local remedy, increased radio sensitiveness is the rule for one month after the complete disappearance of the reaction. A physician about to prescribe topical applications of an irritating nature should first ascertain whether the parts to be so treated have been recently irradiated or are to be irradiated. A physician about to apply Roentgen-rays or radium to a patient should first ascer-

tain whether irritating topical remedies have been recently used; and the patient should be cautioned against additional local treatment without the knowledge and consent of the physician who applied the Roentgen-rays or radium.

#### UNUSUAL HERPES ZOSTER.<sup>9</sup>

Corson and Knowles of Philadelphia state that herpes zoster has been reported to occur in between one and two per cent. of all diseases of the skin, usually nearer the smaller figure, and is pretty constant both in Europe and in America. In certain periods it is seen with great frequency, so that it amounts almost to an epidemic; at other times it may be very seldom met with. There are certain vagaries and interesting atypical cases occasionally seen.

By some a relationship of this affection to varicella has been discussed, by others the meaning of the rare general eruption accompanying it, as well as the exceptional paralysis coexisting with the outbreak, a bilateral distribution, and its occurrence on the same side at a distance. The last is quite uncommon. In a few cases cranial and spinal nerves have been affected at very distant places.

Two cases are reported: one, that of a housemaid of 50 years, whose mental processes were confused and whose speech was slurred. The superior rectus and the elevator of the upper lid were paralyzed; she was by turns delirious or stuporous, and it was thought that she had bulbar lethargic encephalitis. She had been taking Fowler's solution for about five weeks when she developed a zoster over the posterior aspect of the right thorax, and also on the right side of the forehead. In this case the arsenic may have been a causative factor, as there are many well-known instances of zoster following the ingestion of this drug. A motor paralysis is a more frequent occurrence with zoster. Greenough saw it but twice in 255 cases of this affection.

The second case is that of a man of 26, who presented the eruption on the left side of the face and also in the supraclavicular, infraclavicular and suprascapular regions of the same side. There was also a left facial paralysis, which was said to have appeared at the same time as the eruption. The patches on the face were situated in front of the ear, and, lower, over the ramus and body of the mandible in the area supplied by the third cervical root, while the eruption over the clavicle was entirely in the area innervated by the fourth cervical root.

The writers' conclusions are that in the cases of herpes zoster associated with facial paralysis, the geniculate ganglion has uniformly been found inflamed, when examined. The sensory ganglia affected in this case were the third and fourth cervical. While it is customary for only one ganglion to be involved, Hunt says: "It is probable that two ganglia are occa-

sionally affected together. From clinical observation this seems particularly liable to occur with the second, third and fourth cervical." In Hunt's table of types of eruption found in the 80 cases associated with facial paralysis, only one was of the combined facial and occipitocervical distribution.

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- 5 Arch. of Derm. and Syph., Nov., 1921.
- 6 Arch. of Derm. and Syph., Nov., 1921.
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- 8 Jour. A. M. A., Nov. 5, 1921, p. 1489.
- 9 Arch. of Derm. and Syph., May, 1922.

#### Book Reviews.

*The Venereal Clinic: The Diagnosis, Treatment and Prevention of Syphilis and Gonorrhoea.* By several writers. Edited by Ernest R. T. Clarkson. Wm. Wood & Co. 477 pp. Price \$6.50.

This handbook of venereal disease, by a number of English writers, consists of a Section on Syphilis by A. Malcolm Simpson, Henry C. Semon and James H. Sequeira; a Section on Gonorrhoea in the male by E. R. T. Clarkson, W. Wyndham Powell and A. Malcolm Simpson; a Section on Gonorrhoea in the female by M. Rawlins; one on Gonocecal Affection of the Eye by Alex. Bruce Roxburgh; one on Bacteriology by Philip Panton; and Part Two, on the Sociological and Administrative Aspects of Venereal Disease, by E. R. T. Clarkson and H. S. Q. Henriques.

Beyond a doubt the medical profession in England is handling the venereal disease question with more candor and serious thought than is shown by medical men in this country. Perhaps the problem is more acute in England.

This book reflects the British attitude; it is original, honest and fully awake to the broader relations of venereal disease. One finds in it, not a hackneyed account of the period of incubation and prevailing symptoms, but a full discussion of those mooted questions in diagnosis and treatment upon which there is still divergence of opinion. It is a book which can be read with profit even by experienced venereologists.

Part two deals with venereal disease in the community, the prevention of venereal disease, adjuvant societies and institutions, the relation of the medical man to patients in a venereal disease clinic, and legislation and the practitioner. Valuable information upon these general aspects of venereal disease is presented in concentrated form. The book should be very helpful to social workers, public health officials, and to all medical men who have anything to do with venereal disease.

*Aids to Bacteriology*, by Wm. Partridge. Fourth Edition, Wm. Wood & Co., New York.

This is a small compendium of bacteriology, without particular merit. It is not illustrated. The size of the volume permits it to be carried in the pocket, and for that reason it might be useful for students engaged in cramming for an examination. The work could be duplicated by taking any good text-book of bacteriology and condensing it, and it has naturally the defects which go with such a process. However, in Chapters 20, 21 and 22, we have sixty-two pages devoted to the bacteriology of food-stuffs and water, and disinfection and disinfectants. This portion of the book approaches excellence.

*Hyperpiesia and Hyperpiesis*. A Clinical, Pathological and Experimental Study. By H. BATTY SHAW, M.D., F.R.C.P., Physician to University College Hospital, etc., etc. Dedicated to Rt. Hon. Sir Clifford Allbutt. Oxford Medical Publication, Henry Frowde and Hodder & Stoughton, London, 1922. Pp. 191 with illustrations, tables and charts.

As its title implies, a critical study of hypertension, its nature, origin, relation to nephritis and treatment based on clinical and postmortem evidence of 50 fatal cases exhaustively studied.

The introduction carries a brief discussion of some of the prevalent theories and a statement of the problem. Section one gives clinical history, gross pathology and microscopic kidney pathology of the 50 cases used as a basis of the study. Section two follows with a careful analysis of clinical details. Section three considers the origin of hyperpiesia and ideopathic cardiac hypertrophy. The fourth section is somewhat technical; describes the experimental study of the search for a pressor substance which acting through the blood stream could cause a rise of blood pressure. Section five, the last, has to do with conclusions and therapy.

As an example of careful and painstaking research, orderly presentation, and sane discussion of present theories and known facts in relation to the author's work, it is hardly possible to say too much in its commendation. As an example of fine book making and in its illustrations it is equally good.

On the whole one of the really worth while books of the year, particularly to one interested in the problems of internal medicine.

*The Treatment of Ordinary Diseases*. From the Note Book of an Old Practitioner. By BEVERLEY ROBINSON, M.D. (Paris), Emeritus Clinical Professor of Medicine at University and Bellevue Medical College, N. Y. Pp. 130, New York American Medical Publishing Co.

Rather pleasant little book discussing in a conversational and non-technical manner most of the common ailments from the ordinary cold

to Colles' fracture with an almost startling superficiality.

It is for its interest as "the note book of an old practitioner" rather than a text-book on "the treatment of ordinary disease" that its value, if it has any value, lies.

While the man with well grounded opinions in medicine may have a pleasant hour or two, a book which recommends that acute middle ears be not opened but allowed to perforate; that dries the operation for acute appendicitis; that regards digitalis as no particular value but teaches the great value of strophanthus and who recommends antitoxin in the treatment of diphtheria but whose only advice as to dosage is to avoid too large a one is hardly a book to put into the hands of a medical student.

In short in the opinion of the reviewer it will find few appreciators except those who may have known and loved the author.

*Disease of the Thyroid Gland*. ARTHUR E. HERTZLER, M.D., F.A.C.S., St. Louis; C. V. Mosby Co., 1922.

This book, as the preface states, represents an effort to bring before the public the results of studies of a particular disease in a small country hospital. The material collected has been carefully studied and compared with the clinical history and each subsequent examination of the patient has been checked by a re-examination of the specimen and slide. The author reaches the conclusion that convincing evidence is obtained to indicate the association of the activity of the interstitial cells with a definite clinical type of thyroid intoxication.

The subject is presented from the viewpoint of a clinical surgeon dealing practically with the thyroid problems. The symptoms of thyroid disease and accepted methods of treatment are described at considerable length though the author fails to mention some of the newer details of treatment. For example, under the head of vocal cord paralysis there is no mention of the operation. Ventriulocorpectomy, recently recommended by Chevalier Jackson for the relief of abductor paralysis. Likewise under tetany there is no discussion of the subject of parathyroid therapy, and under myxoedema no mention is made of the method of checking the administration of thyroid extract with estimations of the basal metabolic rate.

One experienced in thyroid surgery cannot fail to be in accord with the statement that "goiter in the adult is a dangerous disease and unless cured tends to destroy the life of the patient. The so-called innocent goiters, which frequently exist for ten to twenty years, usually sooner or later kill by undergoing toxic or malignant degeneration."

In his discussion of treatment the author makes a statement which is the basis of all success in thyroid surgery: "It is necessary that every therapist follow his cases and construct

for himself a series of experiences, for by this means alone can he develop the niceties of judgement so necessary to the successful treatment of goiter."

In the matter of anaesthesia the author states his preference for local anaesthesia, admitting his lack of experience with nitrous oxide. The almost parallel mortality obtained in different thyroid clinics where each uses a different type of anaesthesia, ether, local, gas oxygen and gas oxygen analgesia, should, in the opinion of the reviewer, lead to the selection of the anaesthetic which is most comfortable for the patient and least limiting to the operator.

The reviewer's experience has not been in accord with the following statement made in the discussion of Basal Metabolism: "Unfortunately the test is a difficult one to make properly and errors of technique too often come in to confuse results." Nor does the reviewer agree with the author's opinion that "a good laboratory man may be of much help to the inexperienced clinician. To the experienced surgeon the aid is relatively little."

As previously stated, the book presents the subject from a practical and generally sound point of view. It is well arranged, with numerous references to the literature and written in a very readable form. Its careful perusal would do much to clear up the confusion concerning thyroid diseases which undoubtedly exists in many medical minds.

## Current Literature Department.

### ABSTRACTORS.

GERARDO M. BALDONI  
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GEORGE G. SMITH  
JOHN B. SWIFT, JR.  
WILDER TILESTON  
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### HYPERTHYROIDISM.

MURRAY, G. R. (*British Medical Journal*, June 10, 1922) divides hyperthyroidism into three groups:

1. Simple hyperthyroidism.
2. Toxic adenoma of the thyroid gland with hyperthyroidism.
3. Exophthalmic goitre or Graves's disease.

He devotes himself particularly to the treatment of the third group,—exophthalmic goitre.

The advantages of operative treatment are:

1. The saving of time by the rapid reduction of the hyperthyroidism and relief of the symptoms.
2. The diminution of the risk of irreparable damage to the heart in the form of the chronic myocarditis which develops in severe and in prolonged cases.
3. The complete and rapid recovery in some cases.

The disadvantages are:

1. The risk to life.
2. The uncertainty of the ultimate result owing to the difficulty in determining the right amount of the gland which should be removed in each case. For example, one of my cases had two partial thyro-

ectomies performed, but at the end of ten years still showed marked symptoms of the malady, which finally subsided under x-ray treatment.

3. The tendency to recurrence at the end of a year. He believes that in any case medical treatment should have a full trial for six months. [J. B. H.]

### THE DIAGNOSTICAL VALUE OF GASTRIC FRACTIONAL TEST MEALS.

FENNERTON, H. S. (*British Medical Journal*, July 1, 1922) discussing the value of fractional test meals in diseases of the stomach concludes as follows:

1. The acidity curves plotted from fractional test meals are of some value in obtaining knowledge of the factors which modify the acidity.

2. Alterations in these factors bear some sort of relation to gastro-intestinal lesions; hence the acidity curves may throw some light on these lesions.

3. These curves seem divisible into at least six types of varying diagnostic value.

4. By comparison with other methods the fractional test meal is at least admissible as an aid to diagnosis. [J. B. H.]

### PULMONARY EMBOLISM AFTER OPERATIONS.

GORDON-WATSON (*The Practitioner*, June, 1922) finds in the surgical post-mortem records of St. Bartholomew's Hospital three cases of pulmonary embolism out of 594 during the years, 1912-1914, at an average age of 52, and nine cases of pulmonary embolism out of 538 post-mortems at an average age of 60 during the years, 1919-1921.

He then discusses the pathology of pulmonary embolism and its occurrence and disseases at great length the factors in its causation. He is a strong opponent of purging a patient prior to operation and believes that the Trendelenburg position and other abnormal positions of the body during operation may be factors in causing such pulmonary emboli. [J. B. H.]

### THE BONY FEATURES OF POSTERIOR CONGENITAL DISLOCATION OF THE SHOULDER.

TODD, T. W. (*Annals of Surgery*, July, 1922), writes as follows: Posterior congenital "dislocation" of the humerus, as illustrated in the Hamann Museum at Western Reserve University, provides the following information:

1. It is of the subacromial type and differs from pathological dislocation in the fact that the humeral head never leaves the glenoid surface.

2. It results from a mal-development confined to the scapula and not affecting the humeral head. The mal-development is in the dorsal part of the scapular neck, so that the glenoid surface is rotated on to the dorsum of the blade. Accompanying this is a drooping of the acromion over the shoulder.

3. Congenital "dislocation" is a high grade of the deformity just described, which, however, may be of slight development and unilateral or bilateral.

4. The condition was found in three white males only among a random sequence of 730 complete human skeletons distributed as follows: 489 white males, 66 white females, 143 negro males, 32 negro females.

5. In the collection just mentioned there is no case of congenital dislocation of femur or radius.

6. Posterior congenital dislocation of the shoulder is not a true dislocation since the humeral head never leaves the glenoid surface. It is undoubtedly "posterior" and all the evidence goes to show that it is really congenital in occurrence since it makes its appearance coincidently with the original scleroblastic formation of the scapula.

7. There is no inherent reason why this postural deformity should not be associated sooner or later with a nerve lesion. [E. H. R.]

## TUMORS OF THE KIDNEY IN INFANCY AND CHILDHOOD.

MIXTER, C. G., *Annals of Surgery*, July, 1922, presents a very interesting article based on a fairly large experience at the Children's Hospital in Boston with this type of case. His article is of much interest and considerable value. He emphasizes the frequency of malignant tumors of the kidney region in infancy, generally insidious in onset, and the strong tendency to recurrence, so that cure can only be expected by very early diagnosis and surgical removal. The confusion of kidney tumors with inter-abdominal tumors in infancy and childhood is also strongly emphasized. [E. H. R.]

## TRANSPLANTATION OF THE ENTIRE FIBULA IN CASES OF LOSS OF THE TIBIA FROM OSTEOARTHRITIS.

MACAUSLAND, W. R., and SARGENT, A. F., *Annals of Surgery*, July, 1922, present a very well illustrated article on this interesting subject. They describe the operative technic and present some very interesting x-ray plates. [E. H. R.]

## OBSERVATIONS ON THE TREATMENT OF ACUTE PERFORATIONS OF THE STOMACH AND DUODENUM WITH REFERENCE TO GASTRO-ENTEROSTOMY.

WELENSKY, ABRAHAM O., *Annals of Surgery*, July, 1922, writes as follows: "In view of all of the facts outlined in this communication it seems to me that the most rational procedure in the presence of an acute perforation is to simply close the perforation. In a certain number this would be all that would ever be necessary. In others a course of medical treatment might be valuable before resorting to any extensive surgical operation. In still others, in which the continued presence or recurrence of post-operative symptoms would make it advisable, further surgical measures could be undertaken in the security of conditions not burdened with the risks of any emergency and with the added advantage of more prolonged pre-operative study and planning. Better and more adequate measures can thus be more securely employed." [E. H. R.]

## THE FATAL OUTCOME OF CERTAIN CASES OF STAPHYLOCOCCUS INFECTIONS OF THE FACE AND LIPS.

MARTIN, W., *Annals of Surgery*, July, 1922, presents an interesting but not very concise paper as the result of thirty years' experience with a fairly large number of these desperate cases. He does not draw any definite conclusions as to treatment, but speaks of various forms in an interesting manner. He emphasizes the often overlooked fact that thrombosis of the cavernous sinus often follows infections of the lip and that this is the cause of the fatal outcome and is of necessity most difficult to deal with. The use of any trauma to the infected area, such as squeezing or other efforts to express infectious material, should be strictly avoided. Attempts at aspiration should also be avoided. Ligation of the jugular is sometimes indicated in selected cases, but the results are not encouraging. The author reports eight case histories in detail and appends a very good bibliography. [E. H. R.]

## HAEMANGIOMAS OF THE GASTRO-INTESTINAL TRACT.

JUDD, E. S., and RANKIN, F. W., *Annals of Surgery*, July, 1922, write as follows: Angiomas of the gastro-intestinal tract are rare and may simulate malignant conditions. When they occur in the stomach, they are generally found on the posterior wall in the common location for malignant conditions.

Similar to other benign tumors of the stomach, angiomas are occasionally found in young persons. There may be no definite gastric upset, the main

complaint being weakness and epigastric discomfort. The acid values of the gastric secretion are generally normal and the general condition of the patient is usually much better than that of the patient with a similarly located malignant lesion.

Angiomas of the stomach, while generally small, may grow to a very large size. They are usually soft and covered with mucous membrane. Histologically, they are composed of fine blood-vessels and masses of fibroblasts and endothelial cells.

At the Mayo Clinic three patients with angioma of the stomach and one with angioma of the duodenum have been operated on in the past two years; two of the patients were young, and two were of cancer age. The advanced age of these two patients and the Roentgen ray findings, similar to those in malignancy, suggested inoperable malignant lesions.

In all cases the tumor was removed and operation was followed by an excellent immediate and late result. [E. H. R.]

## NEUROREURANCES FOLLOWING TREATMENT WITH ARSPHENAMIN.

ZIMMERMAN, ERNEST, *Archives of Dermatology and Syphilology*, June, 1922, says: From the opening of the Syphilis Clinic of the Johns Hopkins Hospital in 1914 to September 1, 1921, 7065 syphilitic patients have been treated. Of these, 1400 were primary or early secondary cases. In this group, neuroreurrences have occurred in 23, or 1.64 per cent. Sixteen additional cases are included in this report, comprising patients who received initial treatment elsewhere and had already developed symptoms of neurosyphilis at the time of their first visit to the clinic, and those seen in the Syphilis Clinic of the Baltimore Eye, Ear, and Throat Charity Hospital.

Dr. Zimmerman tabulates the sum of these cases, which is 39, and discusses their symptomatology, genesis, and prognosis. He finds that pathologically there are two types: a diffuse meningo-vascular process, and a process limited to one or more localized lesions. In the former the spinal fluid is always abnormal, in the latter it may show marked abnormality or it may be entirely normal. Prophylaxis of such lesions depends on thorough mercurial treatment. It seems immaterial whether mercury is administered during or immediately following a course of arsphenamin.

## INJURY OF THE LIMBS DUE TO BACK-FIRE.

BIZARRO, A. H., *Annals of Surgery*, July, 1922, draws the following conclusions:

1. The lower third of the radius and ulna is the commonest seat of back-fire fracture, and the carpal bones the next common.
2. The crack through the epiphyseal line of the radius is the commonest type of single bone lesion.
3. The ulna styloid tip and radial epiphyseal line are the commonest type of double bone lesions.
4. The scaphoid is the commonest carpal bone involved.
5. In individuals under twenty years of age the diagnosis of ulna styloid fracture is more difficult owing to the common occurrence of irregularities of ossification.
6. In twenty-five per cent. of the cases of the series the injury of the wrist was limited to the soft parts.
7. The upper end of both radius and ulna are occasionally the seat of fracture.
8. The age of the individual has no bearing on the fracture being at the epiphyseal line.
9. The great bulk of these injuries is of the indirect type.
10. The prognosis is usually good.

[E. H. R.]

## THE BOSTON Medical and Surgical Journal

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### NUTRITION AND GROWTH IN CHILDREN.

The Great War had many unexpected by-products. Some of these have proved to be of great importance in advancing the public health movement. For example, it is seldom that a nation has received greater shock than that which came to America when the figures were published showing the armies of young men who had been rejected from military service on account of physical unfitness.

It was very natural to turn from this startling picture to the growing children in order to see what conditions are found among them. Even the superficial results secured by understaffed and poorly equipped systems of school medical inspection are found to furnish striking confirmation of the discoveries that were made through the army examinations.

Many physicians, teachers and social workers have long been alarmed by the numbers of children whom they have found to be in need of care and yet not sick enough to require hospital treatment or to be put in bed. These children are clearly under par and unequal to the day's work and enjoyment that belong to them at this time of life. Open air and other special class rooms as well as school lunches have been provided for them. They congest the clinics and are labelled "Run down," "No appetite," "General debility," "Needs a tonic," and yet nothing is done for them. There is nothing

definitely known to be the matter with them and yet everything about them seems to be wrong.

Fortunately there have been clinical studies in operation for a number of years which have blazed a path through this obscure situation. The results of these studies, however, up to the time of the war, had made comparatively little impression upon the public or even upon the members of the medical profession. The condition was sensed only in part—the means of correcting it were not yet appreciated and it was all too easy to fall back upon the vague hope that although a particular child did not seem to be in fit condition "he would outgrow it"!

It had been taken for granted in many situations that the causes of malnutrition were known and understood. Popular opinion favored poverty and insufficient food as the most reasonable explanations, but in nutrition clinics investigation of thousands of children showed that these causes, like many others commonly assumed to be significant, are only secondary and fail to explain the greater number of cases. Many causes have been discovered, but the great majority were found to fall into five fundamental groups: (1) physical defects, especially inflammatory processes of the nose-pharynx; (2) lack of home control; (3) over-fatigue; (4) faulty food habits, with improper and insufficient food; (5) faulty health habits.

It is also clear that although many symptoms are found, practically all of these children show a common characteristic of insufficient body weight in proportion to height. The next step has been to find the limits of variation in weight which mark out the boundaries of what might be considered a zone of weight safety. Clinical observation was first concerned with an average weight line determined by weighing and measuring some hundred thousand American children. Ten per cent. underweight for height was taken as a trial standard, but it was very soon evident that this basis allowed many children needing care to be included within the normal zone. Individuals were observed as they passed beyond this limit and remarkable correlations were evident between changes in weight and various physical and psychical conditions. These studies placed the lower limit of weight safety at about seven per cent., which is practically a year's growth, and it has been found that no child who is habitually this amount below the average fails to show clearly other evidences of malnutrition.

This method furnishes a convenient way by means of which at least 90 per cent. of the children needing care for malnutrition can be identified. Further work upon the causes has developed a nutrition program which has proved applicable to the varying conditions of city and rural life and is in successful operation from Labrador to the Gulf of Mexico and from Boston to Honolulu. An important feature of this nutrition program is the use of the class method

which brings into coöperation the four forces which are essential in dealing with malnutrition: (1) the home; (2) medical care; (3) the school, and other social agencies; (4) the child's own interest. This class or group method for the treatment of malnutrition, as originated and developed by Emerson in this city, has been characterized by Holt as "epochal in the treatment of children."

President Eliot has recently emphasized the necessity of providing for experimentation by independent, private organizations free to work out new lines of attack and development which can be taken over by the state and local community after successful demonstration has proved that they are advantageous. A national society, Nutrition Clinics for Delicate Children, with headquarters in Boston, has made demonstration in leading cities in every section of the country of a program by means of which a large proportion of these malnourished children can be brought back to normal health within a few months' time with such food and health habits established as will keep them there. The school authorities and other community forces are extending the work so that it may reach all children.

But the responsibility of the medical profession does not stop at this stage of development. There are cases to be detected among children who are temporarily malnourished without showing any loss of weight as yet. There are also individuals who require investigation for a period of months and even years before the hidden causes of their malnutrition are disclosed. With proper organization a physician can keep three-quarters of the members of a class of twenty gaining steadily by the expenditure of half an hour of his time each week, but the other fourth furnish a constant challenge to the best results that his training and experience have given him as well as contact with the most effective aids he can secure from specialists in many fields.

The next step in bringing this large proportion of our children of school and pre-school ages up to normal health conditions—a striking challenge to those who seek to forward preventive medicine—lies in providing adequate teaching of the subjects of nutrition and growth in medical schools.

Loss in weight taken by itself may be an early symptom of phthisis, appendicitis, pyelitis, sinusitis, chronic tonsillitis, and other inflammatory processes secondary to naso-pharyngeal obstruction. It is also a sign of such organic defects as deviated septum, intestinal adhesions, and reflex disturbances such as cardio-spasm and anaphylaxis due to protein sensitization. It may likewise be a symptom of toxemias secondary to focal infection, gastritis and intestinal indigestion, overfatigue, bad air, lack of sunlight, drug habits and the deficiency diseases.

Physicians in general practice and even pediatricians have been slow to realize that malnu-

trition and failure to make normal growth are fundamental medical subjects. In consequence this large group of malnourished children, from whose ranks the daily total of more evident illness is recruited, is left to the tender mercies of school nurses, dietitians, social workers, and, to an increasing extent, the chiropractor and the osteopath.

Even a brief experience with the working of a nutrition program will show the fallacy of the common excuses made for neglecting this field and will convince the medical student that malnutrition is a serious medical problem which demands the skill of the best trained physician. Early diagnosis is the most valuable form of preventive work, and is as much a test of skill as is late diagnosis when the condition has progressed to a more serious or critical stage.

No pediatrician would fail to be concerned when an infant ceases to gain in weight and begins to fall away from normal standards, or when he shows pallor, flabby tissues and the least sign of deformity. Yet these symptoms pass unnoticed and uncorrected in older children when they have great significance during the entire growing period. Instead of discouraging the mother who is seeking an examination for her child, the physician should be trained in his college years to expect to lead rather than to follow in this important means of detecting pathological conditions. A great step will be taken in asserting the positive function of the physician when we may expect to have every child given a complete physical-growth examination each year during the period of his growth.

These examinations should be given in the presence of the child's parents and every effort should be made to help them understand the meaning of the defects which the examination discloses. The physician finds that one of the chief advantages of the nutrition class method is that by this means he has weekly opportunities to instruct mothers in the application of health education to conditions appearing in the group of malnourished children. It is in this direction that we must move until the excellent care now given to infants shall be afforded to the pre-school and school periods as well as to growing youth after his entrance into industrial pursuits and college.

The successful accomplishment of this nutrition work has shown clearly that the problem cannot be solved by means of any single line of attack. There must be a thoroughgoing community program, which means that medical service must be tied up closely with social and educational service—that is, with home and school. This will result in health education not only for the children but also for parents and public as well. To accomplish this end Nutrition Clinics for Delicate Children is holding institutes in various parts of the country with the purpose, on the one hand, of training physi-

cians, nurses, and health workers in the special medical and social technique required in the undertaking and, on the other hand, of securing the intelligent interest of parents and educational and health authorities, so that the work may be supported adequately and become a permanent factor in community health and life. Beginning in Boston, institutes of this kind have been held in ten states and from these as centers have reached practically every state in the union.

#### THE CURE OF DISEASES THAT HAVE RESISTED MEDICAL RESOURCES.

Now comes Congressman Sproul and suggests that the government shall offer a prize of one million dollars for the discovery of the cure of any one of the following named diseases: Tuberculosis, pneumonia, cancer, epilepsy and dementia praecox. Without the honor of a personal acquaintance with Mr. Sproul, one may assume that the motive which prompted this suggestion was activated by sympathy for the hundreds of thousands of sufferers afflicted with these diseases and an appreciation of the economic burden on the nation imposed by disability and loss of productive human life. Thus far one may sympathize with the member of Congress, but distrust of his judgment is in order; for the suggestion of the appropriation of these large sums of money carries to educated physicians serious doubt as to the intelligence of the proponent. He may be a good politician, or even a statesman, in dealing with political problems, but he has gone far wide of the mark in his effort to cure these diseases.

This proposition suggests the thought that some persons have an exaggerated estimate of the value of money and a particularly poor conception of its proper expenditure. Some minds infer that the great accomplishments achieved through spending money in some ways warrant the expectation that if sufficient money could be used almost anything would respond to the magic touch of gold. This attitude is one of the unfortunate effects on those minds that have been dazzled by exhibition of the lavish use of money.

There are other features of such proposals which will arouse a feeling of indignation in the minds of most of our scientific workers, for although recognition of meritorious work and the conferring of a dignified honorarium are appreciated by all benefactors of the race, such an offer would not add one particle of energy to scientific investigation. As a rule, great discoveries in medicine have been made by persons possessed of vision and determination, actuated by altruistic motives and controlled by scientific minds. If a million dollars a year could be devoted to the support of those institutions in which research is already being carried on, the

investment would be more to the purpose. One may fear, on the other hand, that some impostor may prey on the credulity of the representatives of the government, as has been done, it is feared, in another country. Instead of stimulating valuable effort the exploiters of turtle serum or our later aspirant for fame, Abrams, and a host of other claimants would lay siege to the treasury, supported by affidavits and personal testimony. Any honest believer in any cure can submit evidence of his claim to impartial analysis and be sure of fair treatment.

Whenever the government is ready to appropriate millions to be used by scientists there will be found many opportunities for aiding existing reputable organizations. An honest ambition to benefit the race is commendable, but all efforts along these lines should be under the guardianship of well-trained minds, endowed with capacity for correct reasoning.

#### COMMUNICABLE DISEASES AND SCHOOL ATTENDANCE.

The reports of Boards of Health for the ensuing two months will be of interest for, if the predictions which have repeatedly been made, that with the opening of schools the number of communicable diseases often show a marked increase, shall prove to be the rule, it will indicate that the health of the scholars has not been carefully supervised.

Parents and physicians should exercise care in determining the character of even slight indispositions before sending children to school. It has been a somewhat common practice to try and get a child suffering with some disorder ready to enter at the appointed date and there is, at times, a well-recognized risk to other pupils in the segregation of well and sick children. Even though a child may be improving he may be harboring the germs of a communicable disease and it is quite impossible for school physicians to cull out all of the doubtful cases. Parents should be instructed that a physician's advice should always be sought before allowing a child in a doubtful condition to go to school. More care is exercised now than formerly, but statistics will indicate the degree of prudence that prevails.

#### NEWS ITEMS.

**MASSACHUSETTS ASSOCIATION OF ASSISTANT PHYSICIANS.** — The first Midsummer Outing of the Massachusetts Association of Assistant Physicians was held at Nantasket Beach on Friday, August 25, 1922. A total of forty-six members attended. The party enjoyed an excellent shore dinner at the Nantasket Hotel where special arrangements had been made for

their entertainment. After dinner a business meeting was called to order by the President, Dr. R. M. Chambers. It was proposed by Dr. H. M. Watkins that the outing be made an annual affair, and the consent to this was unanimous. Following adjournment, the members threw aside the mantle of professional dignity and found themselves rewarded by an afternoon of unalloyed enjoyment.

Neil A. Dayton, M.D., *Secretary,*  
Wrentham State School.

**DR. CHANNING FROTHINGHAM'S TREATISE ON THE CULTS.**—Dr. Bertram Bryant, Secretary of the Maine Medical Association, has sent Dr. Frothingham's treatise on Osteopathy, Chiropractic, and the Profession of Medicine, taken from the *Atlantic Monthly* of July, 1922, to all of the physicians in Maine, in order to enable them to discuss the questions involved intelligently. Much of the substance of this article has appeared in Dr. Frothingham's report in the JOURNAL, under date of Dec. 15, 1921, and in an editorial in the issue of May 19, 1921. All physicians should read Dr. Frothingham's treatise in order that proper influence may be used when these matters are before the legislature.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Aug. 26, 1922, the number of deaths reported was 170 against 174 last year, with a rate of 11.61. There were 34 deaths under one year of age against 38 last year.

The number of cases of principal reportable diseases were: Diphtheria, 67; scarlet fever, 12; measles, 26; whooping cough, 46; typhoid fever, 5; tuberculosis, 40.

Included in the above, were the following cases of non-residents: Diphtheria, 9; scarlet fever, 3; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 1; measles, 1; whooping cough, 4; tuberculosis, 11.

Included in the above, was the following case of a non-resident: Tuberculosis, 1.

### Miscellany.

#### SECOND ANNUAL CLINIC FOR MAINE PHYSICIANS.

The Second Annual Clinic for Maine Physicians, under the auspices of the Maine Public Health Association, the Maine Medical Association, Maine State Department of Health, and the Medical Societies of Androscoggin, Franklin, and Oxford Counties, was conducted Wednesday and Thursday, August 23d and 24th, at Lewiston.

Clinics were held each day at 10:00 A.M. On Wednesday medical and surgical clinics were

held at St. Marie Hospital, at which Dr. Joseph H. Pratt and Dr. Daniel Fiske Jones, both of Boston, lectured and gave demonstrations. On Thursday Drs. Pratt and Jones conducted similar clinics at the Central Maine General Hospital. Selected groups of cases at each hospital furnished material of special interest to the visiting physicians. At the close of each morning session a dainty luncheon was served by the nurses of the hospital.

Each afternoon beginning at 2 o'clock meetings were held at Chase Hall, Bates College, at which papers were read by State and National health officials. Wednesday afternoon health activities were considered from the standpoint of several administrative divisions of the State Health Department. The central topic of the evening was Co-operation, which was considered from three angles—the State Health Department, the Volunteer Agency, and the Medical Profession.

Thursday morning at 9 o'clock public health nurses who had been in attendance at many of the clinics were given a special program at Chase Hall, in which papers were read touching especially on problems arising in this field.

The program of Thursday afternoon was given over to papers on such special subjects as Tuberculosis, Ophthalmology, Mental Diseases, Cancer, Dental Hygiene, and the relationship of each to the public health program.

The two-day session was brought to a close by a dinner at 6:30 Thursday evening at Chase Hall. Dr. John Sturgis, President Androscoggin County Medical Society, presided. The speakers of the evening were Dr. Eugene Kelley, Massachusetts Health Commissioner; Dr. Langdon Snipe, President Maine Medical Association; Dr. E. D. Merrill, President Maine Public Health Association; Dr. Clarence F. Kendall, State Commissioner of Health for Maine; Dr. Clifton Gray, President Bates College; Drs. Joseph H. Pratt and Daniel Fiske Jones of Boston; and Dr. D. B. Armstrong of New York.

The programs of the two days in detail follows.

#### AUGUST 23D.

10:00 A.M. Medical Clinic, St. Marie General Hospital. Clinician in charge, Dr. Joseph H. Pratt of Boston. Surgical Clinic, St. Marie General Hospital. Clinician in charge, Dr. Daniel Fiske Jones of Boston.

2:00 P.M. General Meeting, Chase Hall, Bates College; Chairman, Dr. Clarence F. Kendall, State Health Commissioner. Address of Welcoming Hon. Louis J. Brann, Mayor of Lewiston; Hon. Charles S. Cummings, Mayor of Auburn. "Functions of a State Department of Health," Dr. F. N. Whittier, Brunswick, Member Public Health Council. "The District Health Officer—His Duties and Opportunities," Dr. E. P. Goodrich, Lewiston, Health Officer for the Second Maine District. "The Relation of Social

Hygiene to Community Health," Dr. George H. Coombs, Director Division of Social Hygiene, State Department of Health. "The State Laboratory—How It May be Used," Dr. John Hewat, Director Division of Diagnostic Laboratories, State Department of Health. "Relation of Vital Statistics to the Mortality Rate," Florence S. Cheate, Ph.D., Director Division of Vital Statistics, State Department of Health.

8:00 P.M. General Meeting, Chase Hall, Bates College. Chairman, Dr. Langdon Snipe, Bath, President Maine Medical Association. "Co-operation in Health Work from the Standpoint of the State Health Department," Dr. Eugene R. Kelley, State Health Commissioner for Massachusetts. "Co-operation in Health Work from the Standpoint of the Volunteer Agency," Dr. Donald B. Armstrong, New York, Executive Officer National Health Council. "Co-operation in Health Work from the Standpoint of the Medical Profession," Dr. Bertram L. Bryant, Bangor, Secretary Maine Medical Association.

#### AUGUST 24TH.

9:00 A.M. Meeting for Public Health Nurses, Chase Hall, Bates College. Chairman, Miss Edith L. Soule, Director Division Public Health Nursing and Child Hygiene, State Department of Health. "The Value of National Organizations to Local Associations in Child Health Work," Dr. Donald B. Armstrong, New York, Executive Officer National Health Council. "The Child Problem As Seen from the Viewpoint of the State Board of Charities and Corrections," Gertrude E. Hall, Ph.D., State Board of Charities. "Pure Food and Its Relations to the Health of the State," A. M. G. Soule, Chief Division of Inspection, State Department of Agriculture. "Child Welfare Work a Preventive Health Measure," Dr. Eugene R. Kelley, Boston, State Health Commissioner for Massachusetts. "Dental Demonstration, Red Cross Headquarters," Dr. Irving Pendleton and Miss Louise McLoon.

10:00 A.M. Medical Clinic, Central Maine General Hospital. Clinician in charge, Dr. J. H. Pratt of Boston. Surgical Clinic, Central Maine General Hospital. Clinician in charge, Dr. Daniel Fiske Jones of Boston.

2:00 P.M. General Meeting, Chase Hall, Bates College. Chairman, Dr. E. D. Merrill, Foxcroft, President Maine Public Health Association. "Tuberculosis—its Causes, Prevention and Cure and the Fight Against It as Part of a General Public Health Program," Dr. Francis J. Welch, Portland, Chairman Tuberculosis Division, Maine Public Health Association. "Preventable Eye Disorders," Dr. S. Judd Beach, Portland, Chairman Eye Division, Maine Public Health Association. "Mental Diseases from a Public Health Standpoint," Dr. Forrest C. Tyson, Acting Chairman Mental Hygiene Division, Maine Public Health Association. "Establishment of

Cancer Clinics in Various Public Hospitals in Maine," Dr. E. H. Risley, Waterville, Chairman Cancer Division, Maine Public Health Association. "Dental Hygiene—Its Relation to a General Public Health Program," Dr. Archer Jordan, Auburn, Chairman Dental Hygiene Division, Maine Public Health Association. "The Several Elements in a Broad Program of Public Health Work," Dr. Donald B. Armstrong, New York, Executive Officer National Health Council.

6:30 P.M. Dinner Meeting. Dr. John Sturgis, President Androscoggin County Medical Society, presiding. Speakers—Dr. Eugene Kelley, Dr. Langdon Snipe, Dr. E. D. Merrill, Dr. Clarence F. Kendall, Dr. Clifton Gray, Dr. Joseph H. Pratt, Dr. Daniel Fiske Jones, Dr. D. B. Armstrong.

Representatives from nearly all sections of the State were present and great interest was taken in all the features of the meeting.



#### THE GORGAS MEMORIAL FUND.

At the St. Louis Annual Session the Board of Trustees reported to the House of Delegates that in response to a request received from the directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine for the co-operation of the American Medical Association, the Board had taken action which resulted in the appointment of a committee, representing the American Medical Association, to act on the project. The following were appointed: Dr. George E. de Schweinitz, Philadelphia; Dr. Charles W. Richardson, Washington, D. C., and Dr. Fred B. Lund, Boston.

The House of Delegates unqualifiedly endorsed the Gorgas Memorial as a tribute to a past President of the organization and one of its most distinguished and loved members. At its recent meeting the Executive Committee of the Board of Trustees received the following statement from the committee and directed its publication:

#### STATEMENT AND APPEAL FOR CO-OPERATION.

As a result of the stimulating suggestion of President Porras of Panama, it has been resolved that a fitting memorial shall mark the humanitarian service of the late Major General William C. Gorgas, and the beneficial influence of his life and work on mankind throughout the world. Following the thought of President Porras, it has further been decided that this memorial shall take the form of a scientific institute for the study of tropical diseases and of preventive medicine.

No better place could have been selected than Panama City, the gateway between the Atlantic and the Pacific, where General Gorgas' well-planned and executed work made possible the building of the Panama Canal.

It is hardly necessary to call the attention of the medical profession to the far-reaching effects of General Gorgas' work on the welfare of the people of the whole world, especially in tropical and semitropical climates, and in all places subject to the inroads of infectious disease.

We of the medical profession remember him as our Surgeon General during the early part of the World War. We remember his prompt recognition of the necessity of bringing into active service large numbers of physicians and surgeons from civilian life. We remember his genial and kindly nature, his high character, and his steadfast effort directed toward the organization and equipment of the Medical Corps of the Army. We remember the patriotic response. We remember him as a great sanitary officer, to whom we wish to pay a lasting tribute.

A central committee has been formed, with Admiral Braisted, retired, ex-President of the American Medical Association, as its president. The American Medical Association has appointed a committee of three to work in accord with the central committee, and through its members this appeal is made to the American medical profession.

The plan is to build at Panama an institute for the study of tropical and infectious diseases, with a hospital, laboratories, departments for research and all other facilities required in an institute of this character, erected and administered according to the most progressive, modern ideals. The Panamanian government, owing to the far-sighted, philanthropic vision of President Porras, has donated the great Santo Tomas Hospital and also the ground on which it is proposed immediately to construct the buildings as they have been described. Dr. Strong has been appointed the scientific director.

In conjunction with this work in Panama, there will be established in Tuscaloosa, Ala., the Gorgas School of Sanitation for the purpose of training country health workers, sanitary engineers and public health nurses, especially educated to deal with the problems peculiar to the Southern states.

An endowment of six and one-half million dollars will be required to enable the institute to carry on the work according to the plans which have been formed.

The Republic of Panama has demonstrated its sympathetic and practical interest in this enterprise with splendid liberality. The physicians of our country, and especially the members of the American Medical Association, surely will not disregard the memory of a former president, and will seize the opportunity to make in this respect a contribution of which they will be proud.

The campaign for funds is to be international. A large response is expected from North, Central and South America, since the nations of these countries have been the chief beneficia-

ries of the labors of General Gorgas. It is fitting that his co-workers of the American medical profession should be requested to respond generously to this appeal. It is hoped that every member of the American Medical Association will make as liberal a subscription as possible. Any sum will be gratefully received. Checks should be drawn to the order of the "Gorgas Fund" and should be mailed to the American Medical Association, 535 North Dearborn Street, Chicago.

CHARLES W. RICHARDSON, Washington, D. C.,  
F. B. LUND, Boston,  
G. E. DE SCHWEINITZ, Philadelphia.

#### DESTRUCTION OF LICE.

THE United States Naval Bulletin publishes an extract from "Sanitary Entomology" which gives approved treatments of lice on the body as follows:

*A. Crab louse.*—(1) Kerosene emulsion soap: The soap is made by boiling 1 part of soap chips in 4 parts of water and then adding 2 parts of kerosene oil, or 4 parts of gasoline. This jellies when cold, and 1 part of this soap jelly is added to 4 parts of warm water, making a good liquid soap at very small cost.

This followed by vermin jelly:

Texas fuel oil, sp. grav. 0.86 b. p. 250 to 350° C .....	50 parts
Crude vaseline .....	20 parts
Soft soap .....	30 parts

The cutting or shaving of pubic or axillary hairs is to be avoided because of the discomfort caused. Powders such as N. C. I., etc., should not be used in the pubic regions.

*B. Head louse.*—Wash head with equal parts of kerosene and vinegar or 25 per cent. acetic acid for one-half hour, keeping the head covered with a towel. The vinegar separates the eggs from the hairs, while the kerosene kills them. Use a fine-toothed comb to remove the eggs and lice. Wash the head with warm water and soap containing kerosene (Nuttall).

*C. Body louse.*—(1) Bathe, using liquid kerosene soap emulsion; (2) disinfect, and disinfect clothing, possessions, etc.

In absence of facilities for the above—insecticidal powder (Moore).

Cresote .....	1 c.c.
Sulphur .....	½ gr.
Talc .....	20 gr.

Fumigation: Entomologists prefer cyanide.

In "Investigation of the Louse Problem," by W. Moore and A. D. Hirschfelder, the authors give the following summary of the problem:

1. Lice and their eggs are destroyed by the ordinary laundering processes used in the washing of cotton and khaki goods; for woolens slight alterations in the methods of washing are necessary.

2. Chlorpierin may be used for fumigation of garments, accomplishing the desired results in a short period of time, with a small quantity of the chemical, without the use of high temperatures.

3. The sachet method of controlling lice is ineffective or very expensive.

4. Louse powder may be used with success but, being a wasteful method of applying an insecticide, is not recommended.

5. Impregnation of the underwear is the most promising method of louse control between lousings. Active chemicals of very low volatility are necessary to prove effective for the longest period of time. Halogenated phenols, such as dibrom-metacresol, dichlormono-brommetacresol, and their sodium salts, dibromcarvaerol, and dibrom-xylenol were found to be the most promising

#### COUNCIL ON PHARMACY AND CHEMISTRY.

The following articles were accepted during July:

Intra Products Company: Ven Calcium Caeodylate Ampules-Ipeco.

Winthrop Chemical Company: Theocin.

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

G. W. Carnrick Co.: Corpus Luteum-G. W. C. Co.

Gradwohl Laboratories: Sterile Solution of Mercury Oxycyanide Gradwohl.

Lederle Antitoxin Laboratories: Pollen Antigens-Lederle, Solution Epinephrine-Lederle.

New York Intravenous Laboratory: Loeser's Intravenous Solution of Mercury Oxycyanide. Parke, Davis and Co.: Antipneumococcic Serum (Polyvalent).

Winthrop Chemical Co.: Luminal Sodium Tablets 1½ grains.

#### PROVISIONAL BIRTH FIGURES: 1922

The Department of Commerce announces that provisional birth figures compiled by the Bureau of the Census for the first quarter of 1922 indicate lower birth rates than for the corresponding quarter of 1921. For the states compared, the total birth rate for the first quarter was 23.3 in 1922, against 25.3 in 1921. The highest birth rate for the quarter (29.2) is shown for North Carolina and the lowest (16.5) for the State of Washington. Higher rates will be necessary for the remaining months of the year if the 1922 rate is to equal the 1921 rate for the Birth Registration Area—24.3.

#### MORTALITY FIGURES

Provisional mortality figures compiled by the Bureau of the Census for the first quarter of 1922 indicate higher death rates than for the corresponding quarter of 1921. For the states compared, the death rate for the first quarter was 13.7 in 1922, against 12.6 for the first quarter of 1921. The highest mortality rate for the quarter is shown for the District of Columbia (17.6) and the lowest for Wyoming (9.6). These early figures forecast for the year 1922 a higher rate for the death registration area than the record low rate (11.7) for the year 1921.

#### Obituary.

#### THE PASSING OF A LEADER IN MEDICINE.

DR. STEPHEN SMITH, the well-known surgeon and public health officer of New York, died at Montour Falls, near Elmira, N. Y., August 26, 1922, at the great age of ninety-nine years, six months and seven days. That he would round out the century span was his conviction—a normal lease of life, as he thought, for did it not take twenty years to perfect the bony skeleton in vertebrates? Five times this period would be a proper age for the individual if he observed the rules of health laid down by Dr. Smith, namely, to work hard, not eat too much meat, drink plenty of milk and sleep many hours at night.

The son of a cavalry officer in the Revolutionary War, he was born on a farm at Skaneateles, Onondaga County, on February 19, 1823. As a boy he worked on a farm in the days when farmers got up at four o'clock in the morning and kept at their varied tasks until dark.

Before he had determined to study for a profession, he had studied Latin and Greek. He attended the Academy of Homer, where he was declared to be prepared for the sophomore class of college. Instead of completing his college course, ill-health induced him to enter upon the study of medicine with Dr. Caleb Green of Homer. Under his advice the pupil attended his first course of lectures in the old Geneva Medical College. In 1850 Dr. Smith came to New York and entered the College of Physicians and Surgeons, Columbia University, from which he graduated in 1851.

From 1854 to 1891, Dr. Smith was professor of anatomy at Bellevue Hospital Medical College, and in 1856, associate editor of the *Journal of Medicine*.

An accomplished surgeon and teacher, his "Handbook of Surgical Operations," published early in the Civil War, was widely distributed to the surgeons of the Federal Army. Later his "Operative Surgery" became a standard textbook in the medical schools of the country.

Even before the war he became interested in improving the sanitation of New York, a work which occupied his attention for a long series of years. Through publicity and the assistance of the *New York Evening Post*, he was able to draft a law creating a board of health, and get it passed. Forced to accept the position of health officer under this law, he accomplished yeoman service in cleaning the streets of their filth, establishing health ordinances, and doing away with the scourges of smallpox, typhus, cholera, and diphtheria, which had killed their thousands. Extending this salutary service, he organized and became the first president of the American Public Health Association, which spread throughout the country the propaganda for municipal cleanliness. In his ninetieth year he published a book describing the shocking health conditions in our chief American city before the sanitary era, entitled: "The City That Was."

In his old age he was appointed president of the New York Department of Charities, and instituted far-reaching reforms which did not meet the approval of Mayor Van Wyck, who removed him from office, as he wrote: "for the good of the service."

While a delegate to the Ninth International Sanitary Conference of Paris, when seventy years old, Dr. Smith cured himself of chronic dyspepsia by following the French custom of taking wine with his meals. His account of this experience led the newspapers to cite him as an advocate of the use of alcohol, and the prohibition propagandists to refer to him with scorn.

Recently Dr. Smith had finished two books: "Who Is Insane," depicting his experiences as a lunacy commissioner, and the volume already referred to, "The City That Was." Until a short time ago he had enjoyed good health and had addressed audiences on health problems, his portrait appearing in the art supplements of the Sunday newspapers within a few months.

### Correspondence.

#### CARRYING POSTGRADUATE INSTRUCTION TO THE DOCTOR, NORTH CAROLINA'S PLAN.

*Mr. Editor:*

The following letter was written at my request by Dr. Frederick R. Taylor of High Point, North Carolina, with the idea that the physicians of Massachusetts would be interested to hear what has been done in another state toward stimulating better medical work.

Yours truly,

HENRY A. CHRISTIAN.

High Point, N. C., August 16, 1922.

*Dear Doctor:*

According to your request, I am sending you a few personal impressions of the University Extension Postgraduate Instruction in Medicine as I have seen it in North Carolina. Anything I may say is purely an individual student's view of what seems to me

an extraordinarily valuable method of postgraduate medical teaching.

The essential principle of the work is this: To make possible more widespread postgraduate medical education by sending the instructor to the practitioners, instead of leaving such education to those favored few among the doctors who can get off to distant medical centers.

The first work of the sort which was done in North Carolina was in 1916. The subject chosen was Pediatrics, the branch of medicine in which post-graduate education was most needed in our section. Two instructors were obtained, one from Harvard for eastern North Carolina, and one from Northwestern University, Chicago, for western North Carolina. I believe that this work caused a very striking reduction in infant mortality from diarrheal diseases in our section, though I have no statistics on this point. I am sure that since 1916 I have seen far fewer cases of "alimentary intoxication" and "decomposition" of Finkelstein, and of dysentery in babies, than I saw previous to that time, and these infantile diarrheal disturbances, that I have seen since then, have been of a much milder type, on the average. Dr. C. S. Grayson, of this town, who has a large pediatric practice, shares this view, and Dr. D. A. Stanton, the dean of the profession here, when asked if he thought the course in Pediatrics profitable, replied that he considered it worth \$1,000,000 to High Point and vicinity.

The war interrupted this work after 1916, and it was not resumed until this year, when the subject of Internal Medicine was selected, there being two instructors, one from Harvard and one from the University of Chicago. In our section the scheme followed is this: The instructor has a circuit of six towns, Asheboro, Greensboro, High Point, Lexington, Salisbury and Charlotte. It was planned that a class should be held each weekday in one of these towns. As nobody wanted a class on Saturday, the work is doubled up so as to have classes in two adjacent towns on Tuesdays, and no class is held on Saturday. The course lasts twelve weeks, each town thus getting twelve lectures. A set subject is presented at each lecture, but after the lecture members of the class are privileged to bring in patients of any kind for diagnosis and discussion, whether they bear on the day's subject or not.

As examples of the subjects taken up, our group was given the following lectures in 1916: Milk, digestion of milk, modern conception of "disturbances of nutrition," failure to gain, the states of dyspepsia and intoxication, decomposition, parenteral and enteral infections as factors in the causation of "disturbances of nutrition," artificial feeding of the normal infant, breast feeding, the disturbances arising in the breast-fed, acute anterior poliomyelitis, obscure causes of fever, convulsions.

This year the subjects so far have been: Lobar pneumonia, chronic lung diseases other than tuberculosis, epidemic encephalitis, endocarditis, angina pectoris and aortitis, irregularities of the heart, peptic ulcer and gastric cancer, constipation and the viscerosomatic syndrome, nephritis and diabetes.

There are a number of striking advantages in this method of having a peripatetic instructor to teach the doctors in their own communities. In the first place, the cost to the individual student is so slight as to put it within the reach of practically everyone. Both in 1916 and this year, \$30 per student has been the charge for a complete course of twelve or thirteen lectures. The only condition is that a certain minimum number of students—I think fifteen—must be guaranteed before a class will be held in a given community. Payment for the entire course is made at the beginning of the first lecture, when an organizer from the university accompanies the instructor, introduces him, and handles all financial matters with

the students. Another saving to the doctors is, of course, elimination of travelling expenses to a distant medical center and living costs while away. The greatest economy, however, results from the fact that in this system the doctor loses no time from his work. This makes it possible to reach a very large number of men who could not, and some who would not otherwise get postgraduate instruction.

A second marked advantage of this method of teaching is that the clinical demonstrations are given on diseases and conditions existing in the physician's own community, and the problems of their everyday work are thus elucidated. This is no small matter. A doctor in a small town may go to some great clinic and feel that the methods of examination and diagnosis in use there are impractical at home. With the method of teaching under discussion, he sees modern diagnostic procedures applied at home, and, perhaps quite as important, *the patients see them, and learn to appreciate and to demand careful, systematic examination.* This at once raises the whole standard of medical practice in a community.

The university has shown wisdom, I believe, in selecting for their teachers in extension work young, able men hailing from a considerable distance. It is seldom possible to get a man of long experience and ability for such work, and a young man of ability is far better than an older man of mediocrity. It is of some importance that he should come from a section too far away to attract many patients from the locality where he is teaching. This removes all suspicion of self-interest from his work. If a local man taught the course he would almost unavoidably engender jealousy in the minds of some others who would desire the work, or whose patients would change to the instructor for their regular physician.

Coming from a distance and having no axe to grind, the instructor can occasionally indulge in some pointed comments to the good of all concerned. For example, a mother brings in a child with chorea. Prolonged rest in bed is advised. The mother says, "But she doesn't want to stay in bed." Whereupon the instructor turns on her rather fiercely and demands, "Mother, who's the boss at your house, you or your child?" Mother doubtless doesn't like this, but she can't fire the instructor, and in the end it has a distinct tonic effect upon the morale of all concerned. In a community where all patients are private patients, such moral tonics are all too rare. The instructor may also tend to speak his mind more freely to his students when he lives too far away to expect to be called by them in consultation practice.

There are certain obvious educational advantages to the teacher in coming from a distant section. He comes in frequent contact with some diseases that are uncommon in his own locality, and thereby broadens his experience. For example, a Northern physician teaching in our section would probably have opportunities to study pellagra and hookworm disease that he could not get at home, although both these diseases are far less common here than they once were. In some parts of eastern North Carolina there are also exceptional opportunities for the study of malaria, though this disease is rapidly decreasing, too. The teacher will also inevitably come in contact with some ideas and methods that are new to him, and even if these are not always of the latest date he cannot fail to pick up an occasional point of value. The relation of teacher and student is always a reciprocal one, and there is no better way to learn than to teach.

"But there is neither East nor West, Border nor breed nor Birth,  
When two strong men stand face to face, tho' they  
come from the ends of the Earth."

And no two earnest, conscientious physicians can get together and work on a common problem without both deriving benefit from their contact, no matter what their differences in training, opportunities, methods or environment.

Just a few words as to the subjects in which post-graduate education of the type under consideration would seem to be especially valuable. Such work is not intended to develop specialists; it is for the purpose of keeping practising physicians in touch with the essential features of modern medical practice. The educational needs of different communities will naturally vary, to a considerable degree. Obviously, physicians located in great medical centers have no need of this type of instruction; they can go to the schools for their postgraduate work at a minimum of time and expense. In our locality, instruction in Pediatrics was urgently needed at the time the course was given. Internal Medicine, dealing as it does with so wide a field, is always timely.

Therapeutics is a field in which postgraduate instruction is much needed; not so much what to give, perhaps, as what not to give, and a study of the action of drugs. Men in practice are incessantly bombarded with literature from all quarters of the earth, advertising all manner of so-called "ethical proprietaries," very many of which are neither ethical nor can they be used with propriety, but fortunate is he who can stand against the continuous summation of stimuli urging him to use the latest (?) scientific (?) discoveries (?) in the treatment of all human ills, unless he also has a balance wheel in an opportunity to obtain really scientific postgraduate therapeutic instruction.

Elementary neuropsychiatric work is another subject in which there is crying need for more knowledge among the profession as a whole, and I hope some day to see this subject brought to us. Dermatologic instruction is much needed, but sufficient clinical material is hardly available in small communities. Surgery and the other specialties seem to me to be such highly specialized fields that they should be taught only in medical centers with ample facilities and clinical material, but I am not competent to discuss these fields.

Different subjects present rather marked variations in their didactic problems. In our locality, Pediatrics found a very receptive audience, as the members of the class had relatively little knowledge of infant feeding. Doubtless they would be equally receptive towards Neuropsychiatry. With Internal Medicine the problem is somewhat different. Here, at least, the more alert members of the class are in a more or less argumentative mood, rather than a purely receptive one. Everyone takes a fling at Internal Medicine, and everyone has his pet theories and practices. Informal discussion plays a relatively large part in this instruction, and has proved very helpful. No doubt Therapeutics would show like didactic problems.

In closing, let me make it clear that I am in no way decrying the usual method of going away to a great school for postgraduate medical instruction; that has been, is, and always will be, invaluable, and in a class apart by itself, for those able to avail themselves of it, but I do believe that this University Extension work is one of the most valuable things that have been done in the history of medical teaching, from the standpoint of widespread benefit to the medical profession and the public.

Very sincerely yours,

FREDERICK R. TAYLOR.

High Point, N. C.

**NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS.**—The 32nd annual session of this association will be held in the Colonial Room, on the third floor of the Hotel McAlpin, New York City, on Saturday, October 28th, under the presidency of Dr. Donald Guthrie of Sayre, Pennsylvania. A very interesting and attractive program is being arranged for this session. Plans are under way to make this the biggest and most successful session ever held by this association.

#### RECENT DEATHS.

**DR. CALVIN OLIVER PRINCE**, for more than thirteen years a practising physician of Plymouth, formerly the medical superintendent of the New England Sanitarium at Melrose, Mass., died at his home in Plymouth, July 28, 1922, at the age of forty-nine, from myocarditis.

The son of Charles A. Prince, he was born in Amherst, N. H., in 1872, and graduated from the American Medical Missionary College, Chicago, in 1899. He was a member of the American Medical Association, the Massachusetts Medical Society, the Plymouth County Medical Society and of the staff of the Jordan Hospital. Latterly he had given special attention to obstetrics. For nearly two years he had been in failing health, the end coming from an attack of myocarditis.

He is survived by his widow, three sons and a daughter.

**DR. JOSEPH HENRY CUNNINGHAM** of Cambridge is reported to have died in London, England, on August 28, 1922, while on a foreign tour with his wife.

He was born in Prince Edward Island, Canada, in 1867, and had lived and practised in Cambridge for thirty years, being on the staff of the Holy Ghost Hospital for Incurables. His education was received at St. Dunstan's College, Canada, where he took an A.B. in 1888. In 1892 he was graduated in medicine at Harvard.

His wife, who was Miss Josephine Carroll of Charlottetown, P. E. I., survives him, as does a brother, Henry J. Cunningham, former commissioner of public safety in Cambridge. Dr. Cunningham was a member of the American Medical Association, of the Massachusetts Medical Society, and of the International Club.

#### DISEASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

WEEK ENDING AUGUST 19, 1922.

<i>Disease.</i>	<i>Cases.</i>	<i>Disease.</i>	<i>Cases.</i>
Anterior poliomyelitis	12	Pneumonia, lobular	19
Chicken-pox	10	Scarlet fever	55
Diphtheria	98	Septic sore throat	3
Dog-bite	7	Syphilis	37
Dysentery	2	Suppurative conjunctivitis	7
Encephalitis lethargica	2	Tetanus	2
Epidemic cerebrospinal meningitis	2	Trachoma	1
German measles	1	Tuberculosis, pulmonary	125
Gonorrhoea	73	Tuberculosis, other forms	9
Malaria	1	Typhoid fever	13
Measles	67	Whooping-cough	110
Mumps	15	Hookworm	2
Ophthalmia neonatorum	18		

#### REPRINTS.

A few reprints of The Treatment of Diabetes Mellitus, by Elliott P. Joslin (BOSTON MEDICAL AND SURGICAL JOURNAL, June 22, 1922), are available and may be procured by applying to Dr. Joslin, 81 Bay State Road, Boston.

#### SOCIETY MEETINGS.

A list of society meetings is herewith published. This list will be changed as information furnished by the secretaries of the societies, and will appear in each issue. The incomplete details and omission of names of many societies is because the information has not been furnished, although the JOURNAL has requested information for publication. Free publication of dates of meetings is acknowledged much appreciated by societies. Several physicians have spoken of the importance of having a schedule of meetings published so that arrangements may be made for special meetings on dates which may not conflict.

It may be possible to adopt the custom of the publication of notices of stated meetings in the JOURNAL and if this is generally understood, secretaries of societies could save time and expense. If general cooperation can be secured this plan can be made permanent.

#### DISTRICT SOCIETIES.

Barnstable District.—Hyannis.—November 3, 1922, February 2, 1923, (Annual Meeting)—May 4, 1923.

Bristol North District.—Place undecided—September 21, 1922. Bristol North, Bristol South, Barnstable and Plymouth Districts will hold joint meetings sometime this fall.

Bristol South District.—Fall River.—November 2, 1922, May 3, 1923.

Essex North District.—Haverhill, (Semi-Annual Meeting)—Jan. 3, 1923. Y. M. C. A. Building, Lawrence, (Annual Meeting)—May 3, 1923.

Essex North, Essex South, Middlesex North and Middlesex South Districts will hold joint meetings October 18. Place undecided.

Hampshire Districts.—With Hampshire District in Holyoke. Early part of September. Regular meeting in October.

Hampshire District.—With Hampshire District in Holyoke. Early part of September.

The four western districts plan to hold a joint meeting early in October.

#### STATE, INTERSTATE AND NATIONAL SOCIETIES.

September, 1922. Springfield Academy of Medicine Meeting, September 12, 1922, Allen G. Rice, Secretary. New England Surgical Society, 10th Annual meeting will be held at Burlington, Vermont, on September 22 and 23, 1922, P. E. Trousdale, Fall River, Mass., Secretary.

October, 1922. Boston Tuberculosis Association. Tuberculosis Institute for Physicians will be held on October 3 and 4 at the Massachusetts General Hospital, Boston. W. B. Tracy, President, Executive Secretary. New England Dermatological Society, Wednesday, October 11, 1922, at 3:30 p. m., in the Skin Out-Patient Department, Massachusetts General Hospital, C. Guy Lane, Secretary. Clinical Congress of the American College of Surgeons will be held in Boston, Mass., on October 22-27, 1922, at Franklin H. Martin, Chicago, Director. Massachusetts Association of Obstetricians—October 26, 1922, Boston, Mass., F. G. Curtis, Secretary. New York and New England Association Railway Surgeons 32nd Annual Meeting at New York City, October 28, 1922, Donald Guthrie, Sayre, Pa., Secretary.

November, 1922. Massachusetts Society of Examining Physicians, (Date and place of meeting undecided), Hilbert F. Day, Secretary. National Cancer Week, November 12 to 18.

December, 1922. New England Dermatological Society Meeting, Wednesday, December 13, 1922, at 3:30 p. m., in the Surgical Amphitheatre, Boston City Hospital, C. Guy Lane, Secretary.

January, 1923. Massachusetts Society of Examining Physicians, (Date and place undecided), Hilbert F. Day, Secretary. Massachusetts Association of Boards of Health, January 25, Annual Meeting, Boston, Francis G. Curtis, Secretary.

February, 1923. New England Dermatological Society Meeting, February 14, 1923, at 3:30 p. m., in the Skin Out-Patient Department, Massachusetts General Hospital, C. Guy Lane, Secretary.

March, 1923. Massachusetts Society of Examining Physicians, (Date and place undecided), Hilbert F. Day, Secretary.

April, 1923. New England Dermatological Society Meeting, April 11, 1923, at 3:30 p. m., in the Surgical Amphitheatre, Boston City Hospital, C. Guy Lane, Secretary. Massachusetts Association of Boards of Health, April 26, 1923, Boston, Francis G. Curtis, Secretary.

May, 1923. Massachusetts Society of Examining Physicians, (Date and place undecided), American Pediatric Society Meeting, May 31-June 1, 1923, French Lick Springs Hotel, French Lick, Ind., H. C. Carpenter, Secretary.

June, 1923. American Medical Association, San Francisco, June 25-29, 1923, Alexander R. Craig, Chicago, Ill., Secretary.

July, 1923. Massachusetts Association of Boards of Health, July 26, Nantasket, Francis George Curtis, Secretary.